



Mechanical Seals / Couplings / Packings / Gaskets / Pileflon(P.T.F.E) products.

**NIPPON PILLAR PACKING CO., LTD.**

11-48 Nishikaminami 2 chome, Yodogawaku, Osaka 532-0022 Japan

Tel: 81 6 6302 2811

Fax: 81 6 6302 2300

E-mail: pillar@pillar.jp

November 3, 2015

KAVIAN PETROCHEMICAL CORPORATION - OLEFINE PLANT -

### LETTER OF AUTHORIZATION

Dear Sir,

We, Nippon Pillar Packing Co., Ltd., are pleased to inform you that we have authorized the following company as our export handling company of our products to your company.

We, therefore, would ask you to register this company as our import agent in Tehran and you are kindly requested to submit all your inquiries to the following company only.

**RADIN FARAZ CO., LTD.**

Unit 102, First Floor, No. 21, Khark St., Between vali-e-asr & Kalej Crossroad,  
Enqelab AVE., 1133933117, Tehran, Iran

Tel : +9821-88714225 Fax : +9821-88714734

This letter of authorization basically remains effective until the end of October 2016 unless we inform you of any change in future.

Yours very truly,

*Ryoichi Katsumi*

Ryoichi Katsumi, General manager of Overseas division  
NIPPON PILLAR PACKING CO., LTD.





# NIPPON PILLAR MIDDLE EAST FZCO

Unit No.: 133 6EA – Dubai Airport Free Zone, P.O. Box 371455, Dubai – UAE  
Tel: +971-4-2952907 || Fax: +971-4-2952908 || Email: info@nipponpillar.ae

Date: 22<sup>nd</sup> May 2018

## MEMORANDUM OF UNDERSTANDING

To,

**RADIN FARAZ JAM CO. LTD.**

Apt. 5, No. 11, Azadegan Alley North Ghaem Magham Farahani St., 1586747516  
Tehran, Iran

**Sub: Commission payment for supply of Pillar Products to ARYASASOL POLYMERS CO.,  
PO#: 72794 dated 11<sup>th</sup> March 2018, Total Amount: JPY 3,912,200/-**

This Memorandum of Understanding (MoU) is entered into by Nippon Pillar Middle East FZCO, hereinafter referred as "NPME", and Radin Faraz Jam Co. Ltd., hereinafter referred as "Radin" for the purpose to determine about payment of Commission between parties.

1. Accompanying free of charge with Nippon Pillar representative to visit ARYASASOL POLYMERS COMPANY site for technical advice whenever ARYASASOL POLYMERS COMPANY requested.
2. NPME pays Radin as a commission 10% of the total amount receiving via our Japanese main bank as the ARYASASOL's whole payment.
3. The 10% commission payment from NPME will be transferred to Radin using Japanese YEN Currency only.
4. The 10% commission payment will be transferred only after approval from our main bank upon providing the invoice copy from Radin.
5. The 10% commission payment will not be able to proceed in case of Sanction on Iran with following situations:
  - If our main bank refuse to accept the balance 50% payment from ARYASASOL POLYMERS Co.
  - If our main bank refuse to make the transaction with any Iranian bank. Then, will make this commission payment in future once sanctions are lifted on Iran.

Signature

Name: Satoshi Maeno

Title: Director

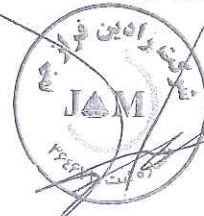
Nippon Pillar Middle East FZCO



Signature

Name: Ahmad Reza Asghari  
Title: Managing Director

**Radin Faraz Jam Co. Ltd.**



**PILLAR**



**Radin Faraz Jam Co.LTD**

No:364671

---

In The Name Of God

Date: 28<sup>nd</sup> May 2018

INVOICE NUMBER: 2412

To,

NIPPON PILLAR MIDDLE EAST FZCO  
#133, 6EA – Dubai Airport Free Zone  
Dubai – UAE

Sub: Invoice for ARYASASOL POLYMERS Co. (PO#: 72794) for Pillar Products.

Dear Sir,

Japanese YEN 391,220 as Commission charges for ARYASASOL POLYMERS project based on the MOU dated on 11<sup>th</sup> March. 2018

**Bank Details**

Account No:802-740-2466227-1

Swift No: SABCIRTHXXX

Iban No:IR070560080274002466227001

Name : Elmira Mollarazi

Yours faithfully,

Authorize Signatory  
Radin Faraz Jam Co.

---

Address: Unit 102 , First Floor, No.21, Khark St, Between Vali-e-asr & Kalej Crossrod, Enghelab Ave, Tehran, Iran

Tel:+98 2188714225,2188714285 Fax:+98 2188714734

[www.RFJCO.com](http://www.RFJCO.com)

E-mail:[info@rfjco.com](mailto:info@rfjco.com)

# MEETING REPORT

Meeting Date: 31/01/2017  
Meeting Time: 11.30 AM to 2.00 PM  
Meeting Duration: 2 Hour  
Factory Visit: 4.00 PM to 5.00 PM  
Place: RADIN FARAZ JAM Co.

## Attendees:

### NIPPON PILLAR MIDDLE EAST FZE

Mr. Satoshi Maeno / General Manager – NPME  
Mr. Akira Sudo / Manager Overseas Div. - NP

### RADIN FARAZ JAM.

Mr. Mohammed R. Asghari / President  
Mr. Hamidreza Asghari / Sales Expert & Auther  
Ms. Maria / Interpreter

Agenda: To discuss about Iran Business strategy for 2017 and to visit Factory.

## Following points were discussed during the meeting.

1. It was agreed for same strategy as KAVIAN for new project from ARYA SASOL Petrochemical.
2. RADIN also agreed to work on commission basis for ARYA SASOL Petrochemical.
3. We would like RADIN to find and identify the PILLAR Brand Mechanical seals as many as possible at ARYA SASOL Petrochemical and RADIN should ask ARYA SASOL to issue the direct RFQ to NIPPON PILLAR MIDDLE EAST Dubai.
4. RADIN has already approached some Industries to supply the PILLAR Mechanical seals, but it was agreed between NPME & RADIN that existing business channel should be applied for BIPC and KARAMANSH and some Other End User to deal through Japanese Trading Co. without involving RADIN.
5. RADIN is planning to shift their factory to some other place and will procure one KEMET lapping machine from UK for their new workshop.
6. It was agreed for working together with good relationship for new project in Iran and we will make a commission agreement between NPME and RADIN based on the final PO from End User. As agreed we will pay 10% as commission to RADIN on final PO value.

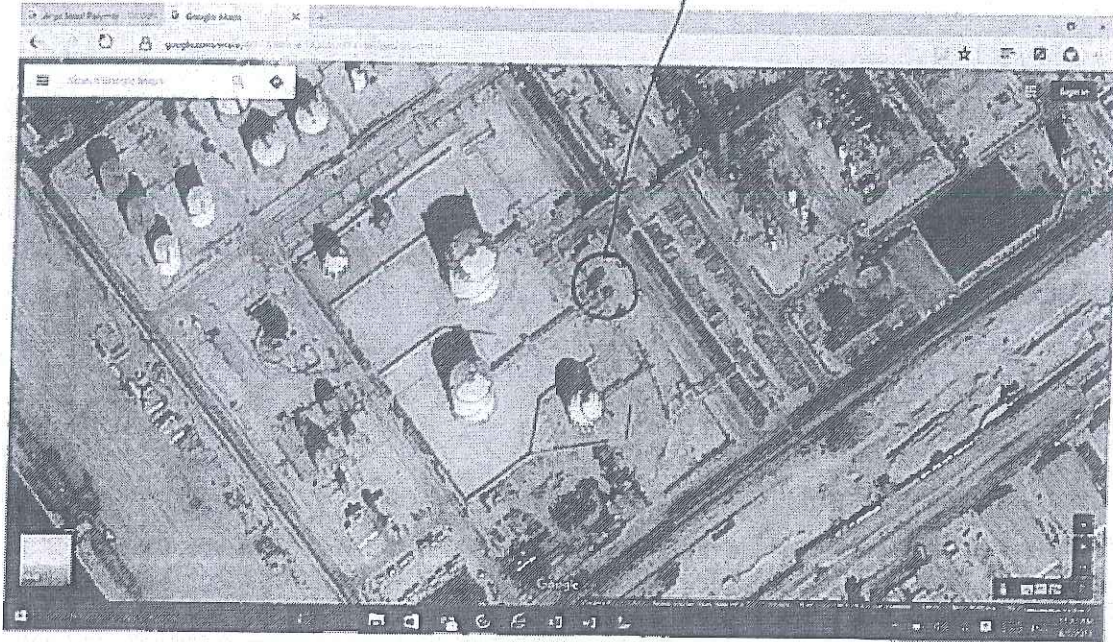
Created By

  
Zamper D.M.

Business Development Coordinator



30-P-707



Azadi  
42578



**Radin Faraz Jam Co.LTD**

No:364671

---

In The Name Of God

Date: 28<sup>nd</sup> May 2018

INVOICE NUMBER: 2412

To,

NIPPON PILLAR MIDDLE EAST FZCO  
#133, 6EA – Dubai Airport Free Zone  
Dubai – UAE

Sub: Invoice for ARYASASOL POLYMERS Co. (PO#: 72794) for Pillar Products.

Dear Sir,

Japanese YEN 3,912,000/- as Commission charges for ARYASASOL POLYMERS project based on the MOU dated on 11<sup>th</sup> March. 2018

Bank Details

Account No:802-740-2466227-1

Swift No: SABCIRTHXXX

Iban No:IR070560080274002466227001

Name : Elmira Mollarazi

Yours faithfully,

Authorize Signatory  
Radin Faraz Jam Co.

---

Address: Unit 102 , First Floor, No.21, Khark St, Between Vali-e-asr & Kalej Crossrod, Enghelab Ave, Tehran, Iran

Tel:+98 2188714225,2188714285 Fax:+98 2188714734

[www.RFJCO.com](http://www.RFJCO.com)

E-mail:[info@rfjco.com](mailto:info@rfjco.com)

# MEETING REPORT

Meeting Date: 27/11/2016  
Meeting Time: 11.00 PM to 1.00 PM  
Meeting Duration: 2 Hour  
Place: RADIN FARAZ JAM Co.

## Attendees:

**NIPPON PILLAR MIDDLE EAST FZE**

Mr. Zameer Dasnadi Mohammed / BDC

**RADIN FARAZ JAM.**

Mr. Hamidreza Asghari / Sales Expert & Auther  
Ms. Nedah / Interpreter.

Agenda: To discuss about KAVIAN order and about Iran Market strategy.

## Following points were discussed during the meeting.

1. RADIN is participating in Iran Oil Fare Exhibition next year in May and they want PILLAR to be participate in this exhibition through RADIN.
2. RADIN want to expand the sales of PILLAR in Iran market and for this they need distributorship agreement contract to make sure the end user that they are genuine PILLAR Distributor agent.
3. As per RADIN there is good opportunity to setup the workshop of PILLAR in Iran, as there is only 2 big workshop for Dry Gas Seal refurbishment, one is from BURGMAN and other from Russian brand Zenith.
4. PILLARY Goster who represents FLOWSERVE in Iran for Supply & Service. They get Mechanical Seals through Dubai.
5. BURGMAN Iran they claim the as agent of EAGLE BURGMANN in Iran, they manufacture Mechanical Seals locally and sell to the Iran Market.
6. For JOHN CRANE, also one local company claim as Agent of JOHN Crane and supply the seals importing from India, Dubai and Turkey.
7. As per 2009 data, BURGMANN market share was 60%, JOHNCRANE & FLOWSERVE 30% and PILLAR & DELCO only 10%.
8. RADIN was approached by LIDERING Mechanical Seals from BARCELONA, Spain to represent their Mechanical Seals to Iran Market. But RADIN has not deiced to go for this offer.
9. RADIN will expand their business for IRAQ market for ARBIL Plant and next week Mr. HAMID will meet the procurement Department to register their company as vendor.
10. Most of IRAQ companies procure the materials from IRAN.
11. As per RADIN most of customer in Iran for FOOD processing industries prefer to have sample piece to make sure them to buy the same items.
12. As per RADIN only 20% comprise of FOOD Industries and 80% of Petro Chemical industries in Iran.
13. BURGAMAN Pars have their 2 workshops in Iran, one is in TEHRAN and other one is in Mahshaire near BIPC.





ASPC

IM / Management Systems & Strategic Studies

Doc Name:

Minutes of Meeting

Page: 1 of 3

Doc No.

IM-MSS-FO-004

Rev: 1

Record Number:

Date: 01.August.2017

SUBJECT: Technical & Commercial Meeting with Nippon Pillar Middle East FZE company

Time:

VENUE:

legend:

P = PRESENT A = ABSENT

DATE:

Remark:

No.	Name & Surname:	P/A	No.	Name & Surname:	P/A	No.	Name & Surname:	P/A
1	Mr. Khalesi		8	Mr. Nejadsalim		15		
2	Mr. Azadi		9	Mr. Asadi		16		
3	Mr. Basiri		10			17		
4	Mr. Panahi Zadeh		11			18		
5	Mr. Asghari		12			19		
6	Mr. Zameer		13			20		
7	Mr. Sasaki		14	佐藤貴倫		21		

Abstract of meeting:

Technical & commercial negotiation regarding RFQ-44173 with NIPPON PILLAR MIDDLE EAST FZE.

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TO VERIFY THAT IS CORRECT VERSION BEFORE USE.





## NIPPON PILLAR MIDDLE EAST FZE

#133 6EA - Dubai Airport Free Zone, P.O. Box 371455, Dubai - U.A.E.  
Tel: +971-4-2952907 Fax: +971-4-2952908

### MEMORANDUM OF UNDERSTANDING

Date: 8.Feb.2017

**To:**

Radin Faraz Jam Co. LTD  
Apt.5, No.11, Azadegan Alley North Ghaem Magham Farahani St.,1586747516,  
Tehran, Iran

Sub: Comission for KAVIAN PETROCEMICAL COMPANY(PKS-941407KA) for Pillar Products.

This Memorandum of Understanding (MOU) is entered into by Nippon Pillar Middle East FZE, hereinafter referred to as "NPME", and Radin Faraz Jam Co.LTD, hereinafter referred to as "Radin" for the Purpose to determine about payment of the commission between parties.

1. Accompanying free of charge with Nippon Pillar Engineer to visit KAVIAN PETROCHEMICAL COMPANY Site for Technical Advice whenever KAVIAN PETROCHEMICAL COMPANY requested.
2. NPME pays Radin as a commission 10% of the amount receiving via our Japanese bank as the KAVIAN's whole payment.
3. The commission payment from NPME to Radin will be using Japanese Yen currency.

Signature:

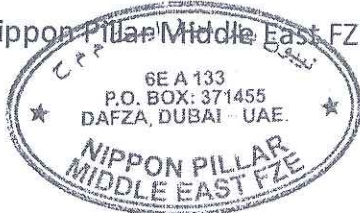
Name:

Satoshi Maeno

Title:

Director

Nippon Pillar Middle East FZE



Signature:

Name:

Title:

Radin Faraz jam Co.LTD.



ASPC

IM / Management Systems & Strategic Studies

Doc Name:

Minutes of Meeting

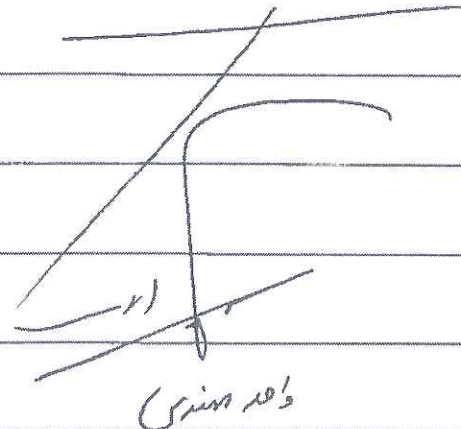
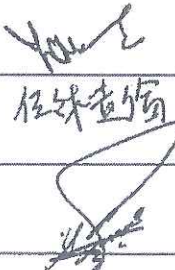
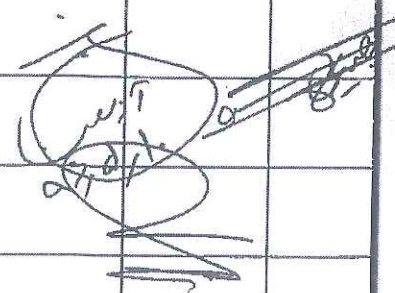
Page: 2 of 3

Doc No.

IM-MSS-FO-004

Rev: 1

**FOLLOWING POINTS WERE DISCUSSED AND AGREED UPON:**

No.	DESCRIPTION	ACTION BY	Due DATE
1	The Nippon Pillar Middle East FZE confirmed only brand of O-rings changed from CHEMRAZ to MORISEI but material of O-rings is same of original (FFKM) and with same performance.	Nippon Pillar Middle East	
2	As per our end-user requested O-rings must be delivered to ASPC along certificate of compatibility with our product. (C3+) <i>* For Approval of the MS-Drawing, PILLAR will provide the Compatibility Certificate</i>	Nippon Pillar Middle East	At the time of delivery *
3	Preparations of pump install location in ASPC plant. (plot plan)	Mr. Azadi	done
4	Acceptance payment term of ASPC are as follow: 25% advance against corporate guarantee 50% after final inspection 25% after delivery of goods	Nippon Pillar / ASPC	to be finalized
			
	<i>Criss 20's</i>		

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Product Data Sheet

# ASPC C3+ CUT

## PRODUCT DESCRIPTION:

C3+ cut has been manufactured as a byproduct of ethylene plant designed based on TECHNIP technology.

## APPLICATIONS:

C3+ used for extraction of 1,3 Butadiene, Propylene...

## PRODUCT PROPERTIES:

Typical Vapor Pressure: 14.01 Bara at 45°C.

Typical Density: 0.592 g/cm<sup>3</sup>

## PRODUCT SPECIFICATION:

Component	Min.	Max.	unit	Test method
Acetylene	0.00	0.01	% wt	ASTM D2163
Ethylene	0.01	2	% wt	ASTM D2163
Ethane	5.70	9.69	% wt	ASTM D2163
MAPD	0.38	0.84	% wt	ASTM D2163
Propylene	14.36	21.54	% wt	ASTM D2163
Propane	1.59	3.59	% wt	ASTM D2163
1,3-Butadiene	29.73	37.93	% wt	ASTM D2163
C4s	11.02	15.42	% wt	ASTM D2163
C5 ~ C9	17.46	29.10	% wt	ASTM D2163
C10+	0.10	5.59	% wt	ASTM D2163
Total Sulfur	0.0	Max. 30	mg/lit-(liquid)	ASTM D 6667

## TOXICITY AND SAFETY:

For more detailed information on handling, storage, safety parameters, refer to relevant MSDS of Components.

## CONTACT US:

**Tehran office:** 7th Floor ,No.2551, Kian Tower, (on the corner of Shahid Naseri), Valiasr AVE, Tehran- Iran

Postal code: 1968643111

P.O.Box:15875-8393

Tel: (+9821) 88645201-7, 85920000

Fax: (+9821) 88645193

[www.Aryasasol.com](http://www.Aryasasol.com)

Email: [sop@aspcpe.com](mailto:sop@aspcpe.com)

*Note: this information is based on our current knowledge and experience .in view of many factors that may affect processing and application, this data does not relive processors from the responsibility of carrying out their own tests and experiments, neither does it imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.*



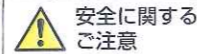
**PILLAR 日本ピラー工業株式会社**  
**NIPPON PILLAR PACKING CO., LTD.**

本社・営業本部 〒532-0022 大阪市淀川区野中南2丁目11番48号 TEL06(6305)1941 FAX06(6305)0606  
 東京支店 〒100-0011 東京都千代田区内幸町2丁目2番2号(富国生命ビル13階) TEL03(3508)1611 FAX03(3508)1881  
 横浜支店 〒231-0012 横浜市中区相生町6丁目113番地(オーク桜木町ビル) TEL045(201)1361 FAX045(201)1391  
 名古屋支店 〒461-0005 名古屋市中区東桜1丁目4番13号(アイ高岳ビル9階) TEL052(962)7861 FAX052(961)5934  
 京都支店 〒600-8482 京都市下京区堀川通り綾小路下る綾堀川町293番1 TEL075(353)4335 FAX075(353)4336  
 (堀川通り四条ビル5階)

大阪支店 〒532-0022 大阪市淀川区野中南2丁目11番48号 TEL06(6302)5201 FAX06(6305)0373  
 神戸支店 〒673-0898 兵庫県明石市梅屋町1番29(日工住友生命ビル9階) TEL078(914)6654 FAX078(914)6643  
 広島支店 〒732-0827 広島市南区稲荷町4番1号(住友生命広島ビル4階) TEL082(568)2541 FAX082(262)6685  
 九州支店 〒861-1116 熊本県合志市福原1番地25 TEL096(292)4511 FAX096(292)4521

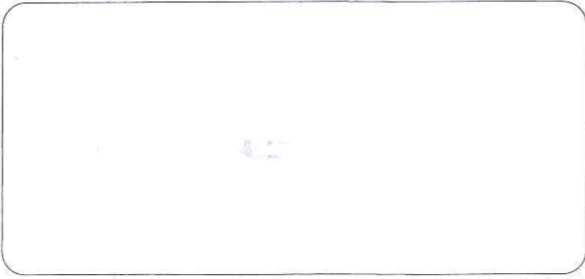
◆ 関連会社 ◆  
 関東ピラーエンジニアリングサービス(株) 市原 TEL0436(25)4160 ピラーサービス販売(株) 堺 TEL072(223)7771  
 東京ピラー(株) 川崎 TEL044(211)6722 ピラーエンジニアリングサービス(株) 倉敷 TEL086(450)0228  
 中部ピラーサービス販売(株) 名古屋 TEL052(678)7715 山崎ピラーエンジニアリングサービス(株) 周南 TEL0834(21)0076  
 北陸ピラー(株) 敦賀 TEL0770(22)1601

URL <http://www.pillar.co.jp/>  
 Email : [sales@pillar.co.jp](mailto:sales@pillar.co.jp)



安全に関する  
 ご注意

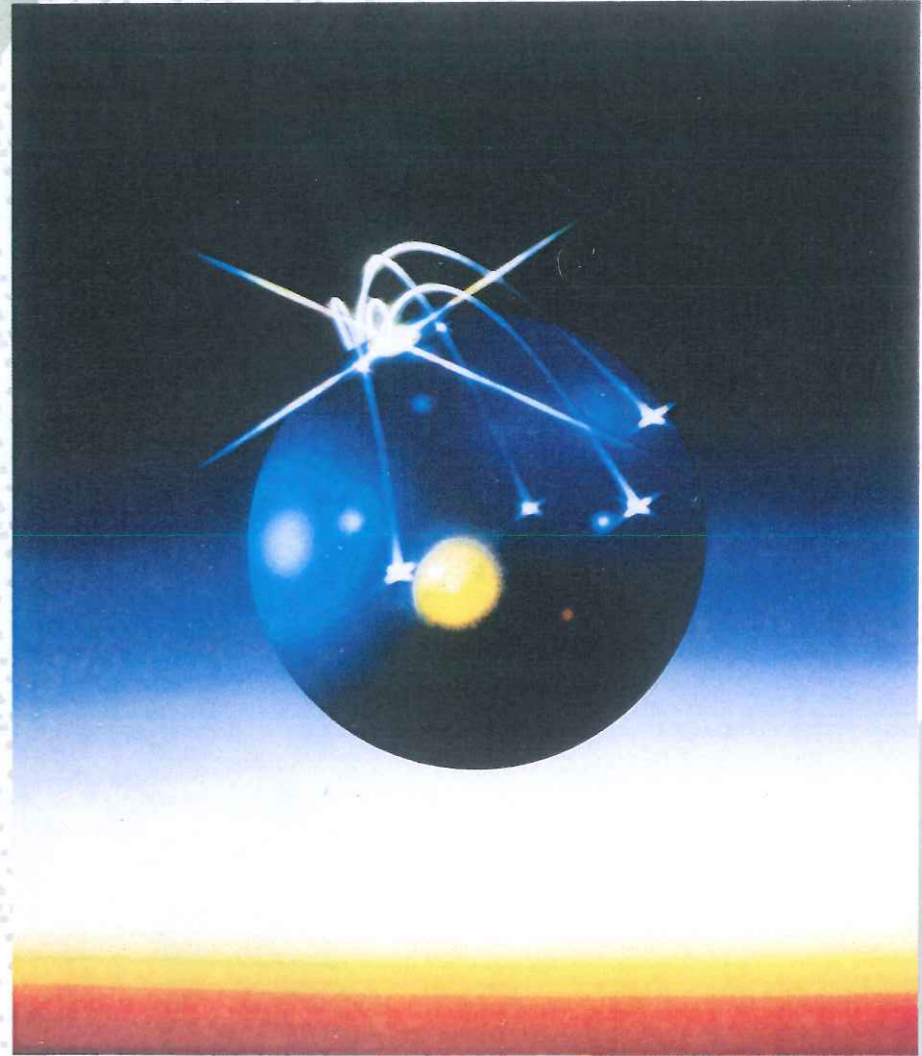
●ご使用の際には、安全に十分ご留意の上  
 正しくお使いください。



CAT. No.196021 1512(Ko)1

PILLAR

# MECHANICAL SEALS



Mechanical Seal

NIPPON PILLAR PACKING CO., LTD.

MPLC 96691



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*INTRODUCTION*

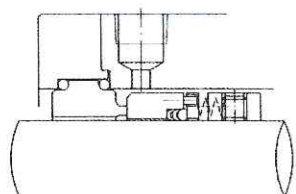
Nippon Pillar has made an effort steadily as maker of marine-use gland packing since its establishment under the motto "Pillar to contribute to the society, using technique". During the period, the company has devoted itself on "Fluid leakage shut-off", and proceeded with the research under the idea to make a contribution to the field of industry as a professional maker for industrial packing, to develop a lot of products. Such Pillar's products have been widely used for main industries in and out of Japan, such as automobile, shipping, steel-making, petroleum, chemical, nuclear, power generation, civil work/building, electronic, semiconductor, information system, etc. We thank such products for helping even slightly to save the energy and resources due to increased efficiency in equipment, and to reduce running cost due to labor saving. Making much of mission to shut off the leakage at this era, Nippon Pillar is intended to develop the product, to meet the diversified needs of market, and to build up the safe and clean environment, making full use of the sophisticated general sealing technique and its service network.



TYPE AAU, ABU



(基本構造) Construction



特長

ピラーシールで最も歴史が長く、広範な産業で使用されている代表的なアンバランス形シールです。使用される機器の寸法・構造・用途に対応できるように1形、3形、8形の3種類の形状の固定環を標準化し、幅広い用途で安定した性能を発揮するようにマルチスプリングを採用した設計です。

Features

The mechanical seal of this type is a typical un-balance seal of Pillar seals, used for any industries since olden times. It uses the standardized stationary seal (3 types: type-1, type-3, type-8) to be compatible to the dimension, construction and application of equipment used, and used multi-spring to demonstrate the stabilized performance in a wide range of application.

- |       |                       |               |                                   |
|-------|-----------------------|---------------|-----------------------------------|
| ●性能   | .....圧力：1.3 MPa       | ●Performance  | .....Pressure : 1.3 MPa           |
| ..... | .....周速：20 m/s        | .....         | .....Speed : 20 m/s               |
| ●呼び径  | .....φ20～φ250         | ●Nominal Size | .....φ20～φ250                     |
| ●用途   | .....プロセス用ポンプ、攪拌機、ブロウ | ●Application  | .....Process Pumps, Mixer, Blower |

特長

上記 AAU, ABU 形のバランス形シールです。

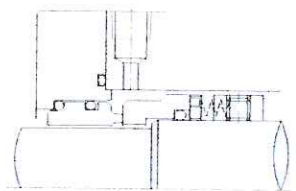
Features

The mechanical of this type is a balance seal for type AAU and type ABU described above.

- |       |                       |               |                                   |
|-------|-----------------------|---------------|-----------------------------------|
| ●性能   | .....圧力：3.5 MPa       | ●Performance  | .....Pressure : 3.5 MPa           |
| ..... | .....周速：20 m/s        | .....         | .....Speed : 20 m/s               |
| ●呼び径  | .....φ20～φ250         | ●Nominal Size | .....φ20～φ250                     |
| ●用途   | .....プロセス用ポンプ、攪拌機、ブロウ | ●Application  | .....Process Pumps, Mixer, Blower |

TYPE AAB, ABB

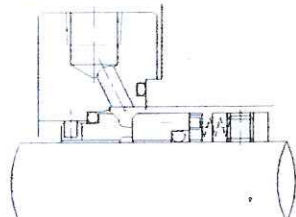
(基本構造) Construction



TYPE AEU, AFU



(基本構造) Construction



特長

ISO, ANSI, 規格のポンプにも適用可能に設計されたシールで、形式 AAU, ABU の姉妹品です。

Features

The mechanical seal of this type is a seal designed to be applicable to the pump of ISO and ANSI code, and is a sister product of type AAU, ABU.

- |       |                       |               |                                    |
|-------|-----------------------|---------------|------------------------------------|
| ●性能   | .....圧力：1.3 MPa       | ●Performance  | .....Pressure : 1.3 MPa            |
| ..... | .....周速：20 m/s        | .....         | .....Speed : 20 m/s                |
| ●呼び径  | .....φ18～φ130         | ●Nominal Size | .....φ18～φ130                      |
| ●用途   | .....プロセス用ポンプ、ケミカルポンプ | ●Application  | .....Process Pumps, Chemical Pumps |

特長

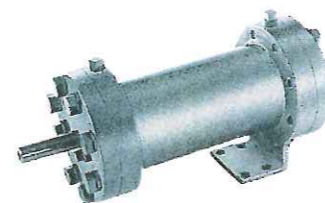
上記 AEU, AFU 形のバランス形シールです。形式 AAB, ABB の姉妹品です。

Features

The mechanical seal of this type is a balance seal for type AEU and type AFU described above, and is a sister product of type AAB, ABB.

- |       |                       |               |                                    |
|-------|-----------------------|---------------|------------------------------------|
| ●性能   | .....圧力：3.0 MPa       | ●Performance  | .....Pressure : 3.0 MPa            |
| ..... | .....周速：20 m/s        | .....         | .....Speed : 20 m/s                |
| ●呼び径  | .....φ22～φ130         | ●Nominal Size | .....φ22～φ130                      |
| ●用途   | .....プロセス用ポンプ、ケミカルポンプ | ●Application  | .....Process Pumps, Chemical Pumps |

均圧器



Equalizing Units

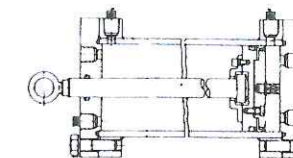
Features

Equalizing unit is designed to pressurize the seal liquid of double seal such as agitator, etc., and is suitable to equipment in which has no pressure source.

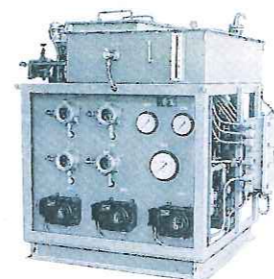
(特長)

攪拌機等のダブルシールの封液加圧用として設計されたもので、外部からの圧力源がない機器に適しています。

(基本構造) Construction



プレッシャユニット



Pressure Units

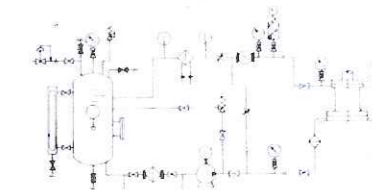
Features

This is a double seal type sealing liquid circulation unit used for mixer, pump, blower, etc. The pressurizing method is available in two types of nitrogen gas pressurizing method and pump pressurizing method. The non-standard type is also available to designing.

(特長)

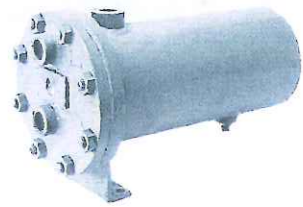
攪拌機、ポンプ、ブロウ等に使用されるダブルシールの封液循環装置です。加圧方式は N<sub>2</sub> ガス加圧方式、ポンプ加圧方式の2種があります。標準以外の設計も可能です。

(基本構造) Construction



注：圧力、周速限界はそれぞれ最大値を表していますので、適定にはご注意ください。  
Note: It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

### フラッシングクーラ

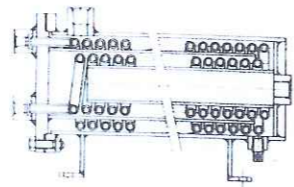


【特長】

高温流体の場合にメカニカルシールを保護するため、フラッシングラインに設置されます。伝熱管は各流体に適用できるように、各種用意しています。

TYPE	伝熱面積
HE-5S	0.25m <sup>2</sup>
HE-5A	0.4 m <sup>2</sup>
HE-5B	0.6 m <sup>2</sup>
HE-5C	0.8 m <sup>2</sup>

【基本構造】 Construction



Cooler

Features

The flushing cooler is installed at the flushing line, to protect the mechanical seal for case when the high-temperature fluid is used. Each type of heat transfer pipe is prepared, to be applicable to each fluid.

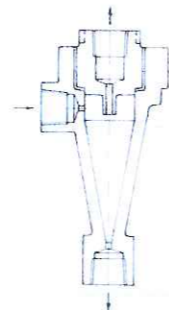
### サイクロンセパレータ



【特長】

メカニカルシールをスラリーから保護するため、シールボックスへのフラッシングラインに設置します。フラッシング流体を円錐状の本体に注入し旋回運動で遠心力を加えることにより固形粒子を分離し排出します。

【基本構造】 Construction



Cyclone Separator

Features

The cyclone separator is arranged at the flushing line leading to the seal box, to protect the mechanical seal box from slurry. The flushing fluid is poured in the conical main unit, and is applied with centrifugal force by executing the turning operation, to separate and discharge the solid particle.

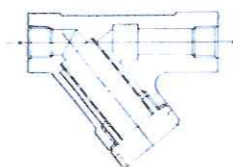
### Y形ストレーナ



【特長】

メカニカルシールをスラリーから保護するため、シールボックスへのフラッシングラインに設置します。スラリーは内蔵されている網により除去されます。

【基本構造】 Construction



Type-Y Strainer

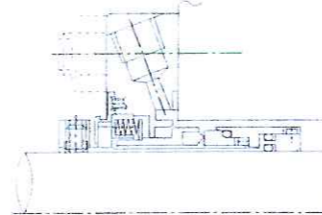
Features

The type-Y strainer is arranged at the flushing line leading to the seal box, to protect the mechanical seal box from slurry. The slurry is removed by the built-in net.

### TYPE GAKEM



【基本構造】 Construction



特長

ナイフエッジシールを標準採用しており、清水から高粘度流体、スラリー液まで幅広い流体に適用が可能です。シール端面材料は耐摩耗・耐薬品性に優れた SiC を採用し長寿命が期待出来ます。またコンパクトな設計になっており ISO、DIN 規格のポンプにもそのまま装着が可能です。

Features

Since this seal uses knife edge seal for mating ring, it provides the stabilized performance against high viscosity and slurry liquid. Mating ring is made of SiC, which provide excellent resistance against corrosion and wear. The mechanical seal of this type is seal designed to be applicable to the pump of ISO and DIN code.

●性能

.....圧力：1.0 MPa  
.....周速：20 m/s

●呼び径

.....φ20～φ100

●用途

.....プロセス用ポンプ、ケミカルポンプ

●Performance

.....Pressure : 1.0 MPa  
.....Speed : 20 m/s

●Nominal Size

.....φ20～φ100

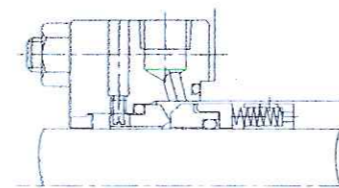
●Application

.....Process Pump, Chemical Pump

### TYPE TEL8M



【基本構造】 Construction



特長

シールリングに SiC を単体で使用し、ドライブカラに放射状の溝を設けたマルチスプリング形メカニカルシールです。金属部品は SUS316 で構成しており、酸・アルカリ溶液・微粒子を含む流体のほか広範囲の流体に使用可能です。

Features

This seal is multi spring type seal with solid SiC seal ring and radial grooves on the drive collar. SUS316 is used for metal parts which is applicable to acid, alkaline and wide range liquid.

●性能

.....圧力：0.5 MPa  
.....周速：10 m/s

●呼び径

.....φ20～φ55

●用途

.....プロセス用ポンプ、ケミカルポンプ

●Performance

.....Pressure : 0.5 MPa  
.....Speed : 10m/s

●Nominal Size

.....φ20～φ55

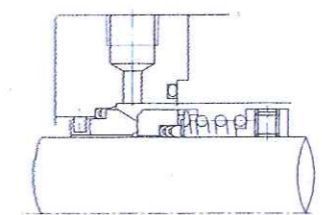
●Application

.....Process Pump, Chemical Pump

### TYPE CEU, CFU



【基本構造】 Construction



特長

ISO 規格のポンプに適用できるように設計され、摺動材に SiC を標準採用したワンコイルスプリングシールで、ケミカル液に適しています。高粘度液用として同様な構造のナイフエッジシールもあります。(形式：CEL, CFL：圧力 0.5MPa)

Features

The mechanical seal of this type is a one-coil spring seal of which mating material generally uses SiC, so designed as to be applicable to the pump of ISO standard, and is suitable to the chemical liquid. The knife edge seal of slimiar construction is also available to the high-viscosity liquid. (Type: CEL, CFL Pressure: 0.5MPa)

●性能

.....圧力：0.9 MPa  
.....周速：15 m/s

●呼び径

.....φ18～φ55

●用途

.....プロセス用ポンプ、ケミカルポンプ

●Performance

.....Pressure : 0.9 MPa  
.....Speed : 15 m/s

●Nominal Size

.....φ18～φ55

●Application

.....Process Pumps, Chemical Pumps

注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。

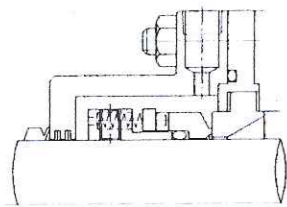
Note: It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.



## TYPE EAB



〔基本構造〕 Construction



## アウトサイドバランスタイプ

**特長** 摺動材に耐食性、耐摩耗性に優れたSiC同士の組合せを標準としたアウトサイドシールです。腐食性の厳しい薬液用に適しています。高粘度液用に同様な構造のナイフエッジシールもあります。(形式：EAK)

## Out-said Balance Type

**Features** This is an outside seal generally made up SiC materials in combination, which provide excellent resistance against corrosion and wear, and is also suitable to highly corrosive chemicals. The knife edge seal of similar construction is also available to the high-viscosity liquid. (Type : EAK)

- |            |                   |                |  |
|------------|-------------------|----------------|--|
| ●性能        | .....圧力：1.0MPa    | ●Performance   | .....Pressure : 1.0 MPa                  |
| .....      | .....周速：20m/s     | .....          | .....Speed : 20 m/s                      |
| ●呼び径       | .....φ20～φ130     | ●Nominal Size  | .....φ 20～φ 130                          |
| ●用途        | .....各種産業での薬液用ポンプ | ●Application   | .....Chemical Pumps                      |
| ●代表的摺動材組合せ | .....SiC vs. SiC  | ●Face Material | .....Silicon Carbide vs. Silicon Carbide |

## ケミマイティーⅡ ドライコンタクトタイプ

**特長** 軸パッキンにOリングを使用したアウトサイド形メカニカルシールで、シール構成部分が機器本体の外側にあるためメンテナンスが容易です。缶内のガスを直接シールすることが出来るため、ダブルシールのように封液を用意する必要がありません。また、シール液循環ユニットや加圧タンク、シールポットなどの付属機器が不要で設備費の低減が可能です。

## Chemimighty II Dry-contact Type

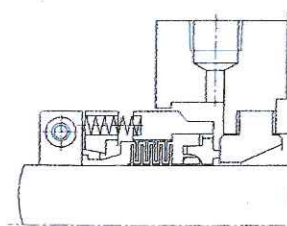
**Features** This seal is an out-side type mechanical seal having an O-ring as a stem packing. Its maintenance is very easy because the seal structure is situated outside the equipment. The tank can be directly sealed to prevent the gas leakages. So, unlike the double-seal type, any sealing liquid is not required. Since it does not need accessories such as a seal liquid circulation unit, a pressure tank, and a seal pot, the investment in equipment can be decreased.

- |            |  |                |  |
|------------|--|----------------|--|
| ●性能        | .....圧力：0.4MPa   | ●Performance   | .....Pressure : 0.4 MPa  |
| .....      | .....周速：1.0m/s   | .....          | .....Speed : 1.0 m/s   |
| ●呼び径       | .....φ20～φ150  | ●Nominal Size  | .....φ 20～φ 150  |
| ●用途        | .....各種産業での攪拌機器  | ●Application   | .....Mixer   |
| ●代表的摺動材組合せ | .....SiC vs. グラスファイバ入りP.T.F.E.<br>.....セラミック単体 vs. グラスファイバ入りP.T.F.E.<br>.....SiC vs. 特殊充填材入りP.T.F.E.<br>.....セラミック単体 vs. 特殊充填材入りP.T.F.E. | ●Face Material | ..... Silicon Carbide vs. P.T.F.E. with glass fibers<br>..... Ceramic vs. P.T.F.E. with glass fibers<br>..... Silicon Carbide vs. P.T.F.E. with Special Filler<br>..... Ceramic vs. P.T.F.E. with Special Filler |

## TYPE WCB



〔基本構造〕 Construction



## 特長

PTFE ベローズと摺動材に SiC を用いた耐食性に優れたアウトサイドシールです。アルミナセラミック等の脆性材料のスリーブにも装着可能な設計となっています。攪拌機等のドライシールとしても優れた性能を発揮します。高粘度用に同様な構造のナイフエッジシールもあります。(形式：WCK)

## Features

The mechanical seal of this type is an outside seal having excellent resistance against corrosion, in which PTFE bellows and SiC is used for sealing material. It is so designed as to be attached to the sleeve made of fragile material such as alumina ceramic, etc. It also provides the excellent performance as a dry seal for agitator, etc. The knife edge seal of similar construction is also available to the high-viscosity liquid. (Type: WCK)

- |       |                 |               |                             |
|-------|-----------------|---------------|-----------------------------|
| ●性能   | .....圧力：0.6 MPa | ●Performance  | .....Pressure : 0.6 MPa     |
| ..... | .....周速：14 m/s  | .....         | .....Speed : 14 m/s         |
| ●呼び径  | .....φ20～φ100   | ●Nominal Size | .....φ 20～φ 100             |
| ●用途   | .....各種薬液、スラリー液 | ●Application  | .....Chemical Pumps, Slurry |

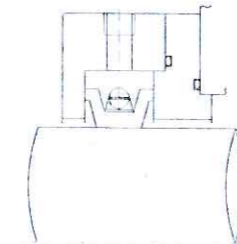
注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。

Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

## TYPE G1 (一般用)



〔基本構造〕 Construction



## 特長

シンプルな U 字形ゴムを用いた端面摺動シールです。軸振れ、軸の偏心の多い低速機器に適しています。優れた自封性能を有し、粉体を含む気体用にも適用可能です。

## Features

The mechanical seal of this type is an end surface type seal which the simplified U-shape rubber, and is suitable to low-speed equipment in which shaft run-out or shaft eccentricity occurs frequently. It provides the excellent automatic sealing performance, and is applicable to the gas containing powder.

- |       |                 |               |                          |
|-------|-----------------|---------------|--------------------------|
| ●性能   | .....圧力：0.2 MPa | ●Performance  | .....Pressure : 0.2 MPa  |
| ..... | .....周速：6 m/s   | .....         | .....Speed : 6 m/s       |
| ●呼び径  | .....φ50～φ450   | ●Nominal Size | .....φ 50～φ 450          |
| ●用途   | .....各種産業機械     | ●Application  | .....Rotating Equipments |

## 特長

フロキュレータの水槽軸貫通部隔壁用シールです。シンプルな U 字形ゴムを用いた端面摺動シールで、優れた自封性能を有します。水中軸受けユニット G1-BS もあります。

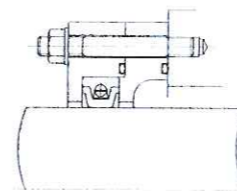
## Features

The mechanical seal of this type is a seal used for partition at the through part of flocculator water tank. It is an end surface type seal which uses the simplified U-shape rubber, and provides the excellent self-sealing performance. The submersible bearing type G1-BS is also available.

- |       |                 |               |                         |
|-------|-----------------|---------------|-------------------------|
| ●性能   | .....圧力：0.2 MPa | ●Performance  | .....Pressure : 0.2 MPa |
| ..... | .....周速：6 m/s   | .....         | .....Speed : 6 m/s      |
| ●呼び径  | .....φ60～φ250   | ●Nominal Size | .....φ 60～φ 250         |
| ●用途   | .....フロキュレータ    | ●Application  | .....Flocculator        |

## TYPE G1-FL

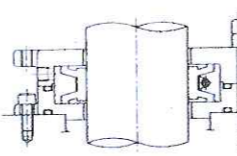
〔基本構造〕 Construction



## TYPE G1-PRS



〔基本構造〕 Construction



## 特長

船用ラダーストックの軸封用シールで、シンプルな U 字形ゴムを用いた端面摺動シールです。ケーシングが分割されていないエコノミ形 G1-E-A もあります。

## Features

The mechanical seal of this type is a seal used for shaft seal of marine rudder stock or end surface seal which uses a simplified U-shape rubber. The economy type G1-E-A is also available, of which the casing is not split.

- |       |                 |               |                         |
|-------|-----------------|---------------|-------------------------|
| ●性能   | .....圧力：0.2 MPa | ●Performance  | .....Pressure : 0.2 MPa |
| ..... | .....周速：6 m/s   | .....         | .....Speed : 6 m/s      |
| ●呼び径  | .....φ80～φ990   | ●Nominal Size | .....φ 80～φ 990         |
| ●用途   | .....船用ラダーストック  | ●Application  | .....Rudder Stock       |

## 特長

シンプルな U 字形ゴムを用いた端面摺動シールで、海水潤滑式軸受を装備した船尾管用のシールです。軸移動への追従性に優れています。NK, JG 等の各船級に実績が多数あります。

## Features

The mechanical seal of this type is an end surface type seal which uses the simplified U-shape rubber, and is used for stern tube, which is provided with sea water lubrication type bearing. It provides the excellent follow-up performance against the axial movement. It has been supplied a lot to each ship class such as NK, JG, etc.

- |       |                  |               |                          |
|-------|------------------|---------------|--------------------------|
| ●性能   | .....圧力：0.12 MPa | ●Performance  | .....Pressure : 0.12 MPa |
| ..... | .....周速：6 m/s    | .....         | .....Speed : 6 m/s       |
| ●呼び径  | .....φ65～φ450    | ●Nominal Size | .....φ 65～φ 450          |
| ●用途   | .....船尾管         | ●Application  | .....Stern Tube          |

注：上記の範囲を超える条件で選定する場合は弊社にご相談下さい。

Note : When selecting the coupling for range exceeding the conditions shown above, consult Nippon Pillar.

TYPE PEC



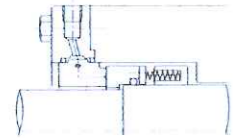
**特長**  
 固定側シール面にオリフィスを通して噴き出すガス圧力とスプリング力とが釣り合い、シール面間に数 μm から十数 μm の安定した隙間を持たせ、漏れ量を制限する非接触形シールです。ラビリンシールやセグメントシール等の軸流形シールに比べ、シール性能、寿命、信頼性に優れていると共に、軸方向寸法も短く、機器をコンパクトに設計可能です。外部に洩らすことのできないガスや粉体を含む気体に用いられます。

**Features**

The mechanical seal of this type is a non-contact type seal, in which the pressure of gas which blows out of through the orifice on to the fixed side seal is balanced with the spring force, and a stabilized clearance (several micro-meters upto several dozens of micro-meters) is secured across the seal surface, to restrict the leakage rate. Since it provides the excellent sealing performance, reliability as well as labyrinth seal, segment seal, etc., it is possible to design the equipment to compactly, and is applicable to the gas containing the gas or powder which is not allowed to leak to the outside.

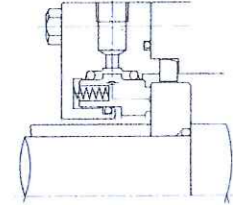
TYPE PEC-1RB

(基本構造) Construction



TYPE PEC-3SB

(基本構造) Construction



●性能 ● Performance

形式 TYPE	圧力 Pressure	周速 Speed	呼び径・Nominal Size
PEC-1RB	2.0 MPa	20 m/s	φ 35 ~ φ 130
PEC-3SB	1.0 MPa	120 m/s	φ 35 ~ φ 400

●用途

タービン、ブロウ、コンプレッサ、攪拌機

●Application

Turbine, Blower, Compressor, Mixer

フェニックスシール



**特長**  
 フェニックスシールは、シール面に不死鳥の羽根のような独自のグルーブを設け、マルチバリアにより動圧を効果的に生かしたシールです。高圧・高速・高温の様々なシミュレーション試験を実施しており、遠心圧縮機からスチームタービン、ブロウまで広範囲にご使用頂けます。

**Features**

Phoenix seal's unique groove patterns on seal face like wings of Phoenix make advanced gas seal technique for centrifugal compressors, steam turbines, blowers, and other machines. The symmetrical and multi-independent grooves give successfully a bi-directional and more stable gas seal to machines.

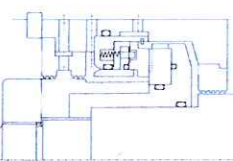
TYPE PPG-1R

(基本構造) Construction



TYPE PPG-3S

(基本構造) Construction



●性能 ● Performance

形式 TYPE	圧力 Pressure	周速 Speed	呼び径・Nominal Size
PPG-1RB	1.0 MPa	20 m/s	φ 40 ~ φ 120
PPG-3SB	10.0 MPa	150 m/s	φ 50 ~ φ 200

●用途

タービン、ブロウ、コンプレッサ

●Application

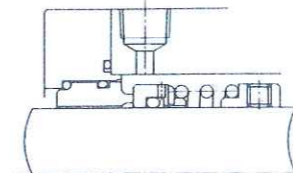
Turbine, Blower, Compressor

注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。  
 Note: It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

TYPE CCU (US-1)



(基本構造) Construction (MC3-D)



**特長**

日本船用工業会に型式 US-1 で正式採用されているシールで、腐食（電食）やスラリの影響を受けにくいワンコイルスプリングを採用しています。回転環の軸用 O リング部分には目詰まりによる追従不良防止用の穴がつけられています。あらゆる産業の冷却水系（工業用水、排水、海水）のポンプにも使用されます。

**Features**

The mechanical seal of this type is a seal which is officially adopted for type US-1 by the Japanese Marine Equipment Association, and uses the one-coil spring which is hardly affected by corrosion (electrolytic corrosion) or slurry. There is a hole prepared at the O-ring of rotating seat, for prevention of follow-up failure due to closing. The mechanical seal of this type is applicable to the pump used for cooling water system (industrial water, waste water, sea water) in any industries.

●性能

.....圧力 : 1.0 MPa  
 .....周速 : 15 m/s

●呼び径

.....φ 20 ~ φ 130

●用途

.....清水、海水、潤滑油、  
 .....カーゴポンプ

●Performance

.....Pressure : 1.0 MPa  
 .....Speed : 15 m/s

●Nominal Size

.....φ 20 ~ φ 130

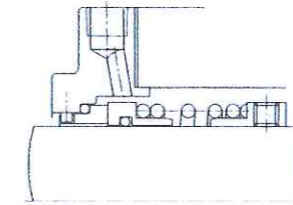
●Application

.....Clean Water, Sea Water,  
 .....Lubrication oil, Cargo Pumps

TYPE CGU (US-2)



(基本構造) Construction



**特長**

日本船用工業会で形式 US-2 と定められたシールで、腐食（電食）やスラリの影響を受けにくいワンコイルスプリングを採用しています。そして船用以外のあらゆる産業でも使用可能です。インチサイズ（US-3）もシリーズ化しています。

**Features**

The mechanical seal of this type is a seal which is officially adopted for type US-2 by the Japanese Marine Equipment Association, and uses the one-coil spring which is hardly affected by corrosion (electrolytic corrosion) or slurry. It is applicable in any industries besides for marine use. The inch-size type (US-3) is also available in series.

●性能

.....圧力 : 1.0 MPa  
 .....周速 : 15 m/s

●呼び径

.....φ 20 ~ φ 180

●用途

.....清水、海水、潤滑油、  
 .....カーゴポンプ

●Performance

.....Pressure : 1.0 MPa  
 .....Speed : 15 m/s

●Nominal Size

.....φ 20 ~ φ 180

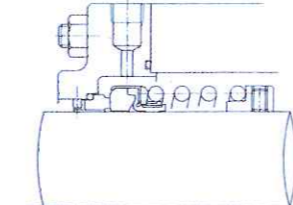
●Application

.....Clean Water, Sea Water,  
 .....Lubrication oil, Cargo Pumps

TYPE HGU



(基本構造) Construction



**特長**

船用シールの改良形です。ゴムベローズを使用しているため、軸パッキン部での追従不良は起こりません。腐食（電食）やスラリの影響を受けにくいワンコイルスプリングを採用しています。

**Features**

The mechanical seal of this type is an improved version of marine use seal. Since it uses the rubber bellows, no follow-up failure will occur at the shaft packing. Besides, it also uses the one-coil spring which is hardly affected by corrosion (electrolytic corrosion) or slurry.

●性能

.....圧力 : 1.5 MPa  
 .....周速 : 15 m/s

●呼び径

.....φ 20 ~ φ 120

●用途

.....清水、海水、潤滑油

●Performance

.....Pressure : 1.5 MPa  
 .....Speed : 15 m/s

●Nominal Size

.....φ 20 ~ φ 120

●Application

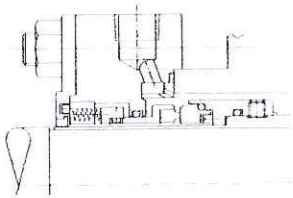
.....Clean Water, Sea Water,  
 .....Lubrication oil Pumps

注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。  
 Note: It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

## TYPE GHB



(基本構造) Construction



## 特長

当社の静止形シール標準タイプで、コンパクトに設計されています。スプリングを大気側に設けているため、目詰まりがおこりません。両持ポンプや立形ポンプ用は、セット爪によってカートリッジ化されていますので、装着時のセット位置が自動的に決まり、寸法調節作業は不要です。

## Features

The mechanical seal of this type is a standard static type seal developed by Nippon Pillar, and is designed for compact type. Since the spring is arranged at the atmospheric side, no clogging will occur in the mechanical seal. For the center impeller type pump or vertical pump, the setting position of mechanical seal is determined automatically, thus requiring no adjustment of dimension, as the setting plate is designed for cartridge type.

## ●性能

.....圧力：4.0 MPa  
.....周速：40m/s

## ●呼び径

.....φ30～φ200

## ●用途

.....石油精製、石油化学、ケミカル等のプロセスポンプ

## ●Performance

.....Pressure : 4.0 MPa  
.....Speed : 40m/s

## ●Nominal Size

.....φ30～φ200

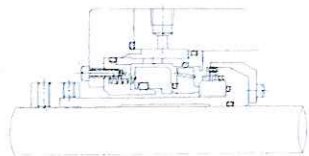
## ●Application

.....Process Pumps

## TYPE JAB



(基本構造) Construction



## 特長

高速、高圧でしかも圧力変動の大きい条件で、安定したシール性を発揮する高負荷条件シールです。左右がほぼ対称なカーボン製遊動環の使用により、大きな圧力変動に強く、遊動環の多数の穴を通るフラッシング液が摺動熱を効果的に除去する設計です。

## Features

The mechanical seal of this type is a seal for high load, which provides the stabilized sealing performance under the conditions of high speed, high pressure and great pressure fluctuation. Since it uses the floating ring made of carbon, which is almost bilaterally symmetrical, it is resistible against a great pressure fluctuation, and makes it possible for the flushing liquid passing through a lot of holes arranged on the floating ring, to remove the sliding heat effectively.

## ●性能

.....圧力：10.0 MPa  
.....周速：80 m/s

## ●呼び径

.....φ50～φ250

## ●用途

.....高負荷原子力発電所用ポンプ、ボイラ給水、循環水ポンプ

## ●Performance

.....Pressure : 10.0 MPa  
.....Speed : 80 m/s

## ●Nominal Size

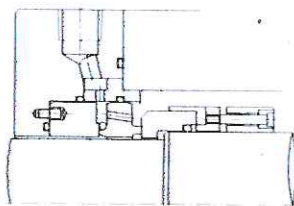
.....φ50～φ250

## ●Application

.....High Velocity, High Pressure, High Temperature

## TYPE YAB

(基本構造) Construction



## 特長

JAB形をコンパクトにした遊動環付回転形シールです。

## Features

The mechanical seal of this type is a rotating type seal with floating ring, which is a compact type JAB.

## ●性能

.....圧力：10.0 MPa  
.....周速：20 m/s

## ●呼び径

.....φ35～φ130

## ●用途

.....高負荷原子力発電所用ポンプ、ボイラ給水、循環水ポンプ

## ●Performance

.....Pressure : 10.0 MPa  
.....Speed : 20 m/s

## ●Nominal Size

.....φ35～φ130

## ●Application

.....High Velocity, High Pressure, High Temperature

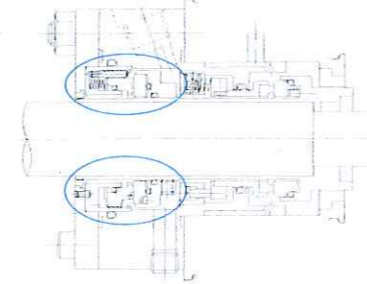
注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。

Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

## TYPE RRG



(基本構造) Construction



## 特長

RRGシールは、2次シール用ドライコンタクトシールで、タンデムシールに替わるシールユニットとしてご利用いただけます。シール面には負荷低減のための溝加工を行い、耐ドライ特性を向上させました。また、シールリングには、特殊潤滑剤を含浸したことで長寿命化を達成いたしました。

## Features

This mechanical seal is used as secondary seal in tandem seal. Groove on the seal face reduces load to the seal and contributes longer life. Special lubricant is impregnated in the seal face, ensuring a stable sealing performance against dry running.

## ●性能

.....圧力：max. 0.1 MPa  
.....周速：max. 20 m/s  
.....温度：max. -50～+180℃

## ●呼び径

.....φ20～φ130

## ●用途

.....各種プロセスポンプ

## ●Performance

.....Pressure : max. 0.1 (0.2) MPa  
.....Speed : max. 20 m/s  
.....Temperature : max. -50～+180℃

## ●Nominal Size

.....φ20～φ130

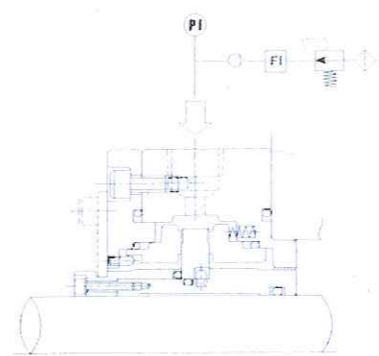
## ●Application

.....Process Pumps

## TYPE AD Seal



(基本構造) Construction



## 特長

液用ダブルドライガスシールは、すきま自動調整機能を備えた動圧タイプの端面非接触形ドライガスシールです。運転前に、シールガスを機内圧+2barで供給し、ポンプを起動すると回転環に設けたグループにより動圧が発生し、シール面に一定のすきまが保持され機内流体の漏れを防止します。シール室の加圧は、窒素ガスで行うため、付帯設備が簡略化でき、従来のダブルメカニカルシールで必要であったオイルユニット等が不要です。

## Features

The double dry gas seal (for liquid) is a dynamic pressure end surface non-contact type dry gas seal provided with an automatic clearance adjustment function.

When the pump is started with the seal gas supplied at "Internal pressure + 2bar" before operation, the dynamic pressure is generated by the groove arranged on the rotary seat, by which a constant clearance is secured at the seal surface, to prevent the leakage of fluid from the equipment.

Since the seal chamber is pressurized, using the nitrogen gas, it becomes possible to simplify the attached unit, and it becomes unnecessary to arrange the oil unit that was required for conventional double mechanical seal.

## ●性能

.....圧力：F.V～1.6 MPaG  
.....周速：3～40 m/s  
.....温度：max. 200℃

## ●呼び径

.....φ50～φ163

## ●用途

.....各種プロセスポンプ

## ●Performance

.....Pressure : F.V～1.6 MPaG  
.....Speed : 3～40 m/s  
.....Temperature : max. 200℃

## ●Nominal Size

.....φ50～φ163

## ●Application

.....Process Pumps

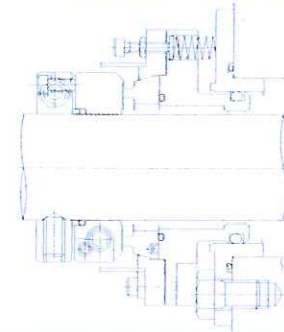
注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。

Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

TYPE SCUR-2 (ARIⅡ)



〔基本構造〕 Construction



特長

ピラーARIⅡシールは、潤滑性に優れた特殊カーボンを採用することで無給水運転は勿論、1時間以上の気中運転を可能にしました。また、固定側の摺動部品と回転側部品が分割構造となっているため、機器を分解することなくメンテナンスが可能です。

Features

The Pillar ARIⅡ seal has made it possible to perform the air operation for over one hour by adopting the special carbon having excellent lubricity.

Since the seal is so constructed that the stationary seal face and rotary side parts are split, the maintenance is executable without disassembling the equipment.

●性能

- .....圧力 : max. 0.5 MPa
- .....周速 : max. 12 m/s
- .....PV値 : max. 4 MPa·m/s
- .....温度 : max. 80 °C

●呼び径

- .....φ35 ~ φ260

●用途

- .....縦軸先行待機、下水雨水排水縦軸、河川水ポンプ

●Performance

- .....Pressure : max. 0.5 MPa
- .....Speed : max. 12 m/s
- .....PV value : max. 4 MPa·m/s
- .....Temperature : max. 80 °C

●Nominal Size

- .....φ35 ~ φ260

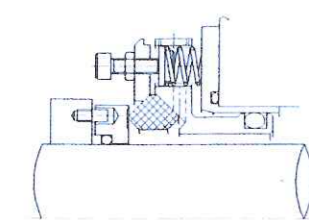
●Application

- .....Vertical axis stand-by pump, Sewage Pump

TYPE SCU (RIⅡ)



〔基本構造〕 Construction



特長

シール面を形成する軟質材側を二分割とし、補修時に機器を分解する必要がなく、アウトサイドに配置することで日常点検を可能にし、またスプリング力を調整可能にしたシールです。

Features

It is not necessary to disassemble the equipment for repair, as the mechanical seal of this type is a seal of which mild material side (making up the seal surface) is split, and also makes it possible to perform the daily inspection, as it is arranged at the outside. It is also make it possible to adjust the spring force.

●性能

- .....圧力 : 1.0 MPa
- .....周速 : 13 m/s

●呼び径

- .....φ20 ~ φ280

●用途

- .....各種水ポンプ、汚水ポンプ

●Performance

- .....Pressure : 1.0 MPa
- .....Speed : 13 m/s

●Nominal Size

- .....φ20 ~ φ280

●Application

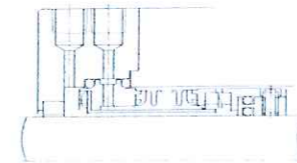
- .....Water Pumps, Filthy Water Pumps

注：圧力、周速限界はそれぞれの最大値を表していますので、選定にはご注意ください。  
Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

TYPE QAK



〔基本構造〕 Construction



特長

成形金属ベローズを使用し、摺動材の一方を鋭利なナイフエッジ状とすることで、高粘度、重合、凝固性の各流体に安定した性能を発揮するように開発されたシールです。

Features

Since the mechanical seal of this type uses a formed metal bellows and its sealing material is designed for sharp knife edge at one end, it provides the stabilized performance against the high-viscosity liquid, polymeric liquid, coagulating liquid, etc.

●性能

- .....圧力 : 1.0 MPa
- .....周速 : 20 m/s

●呼び径

- .....φ20 ~ φ106

●用途

- .....バルブ、食品、塗料、樹脂、合成繊維、高粘度重合性液

●Performance

- .....Pressure : 1.0 MPa
- .....Speed : 20 m/s

●Nominal Size

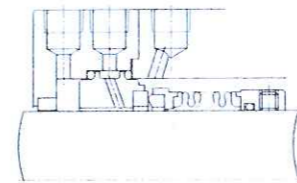
- .....φ20 ~ φ106

●Application

- .....Pulp, Foods, Paint, Resin, Synthetic fiber, Polymerized Liquid

TYPE WAK

〔基本構造〕 Construction



特長

QAK 形をコンパクトにした回転形成形金属ベローズシールです。

Features

The mechanical seal of this type is a rotating type formed metal bellows seal, which is a compact type QAK.

●性能

- .....圧力 : 1.0 MPa
- .....周速 : 12 m/s

●呼び径

- .....φ20 ~ φ114

●用途

- .....粘性液、重合性液、スラリー液

●Performance

- .....Pressure : 1.0 MPa
- .....Speed : 12 m/s

●Nominal Size

- .....φ20 ~ φ114

●Application

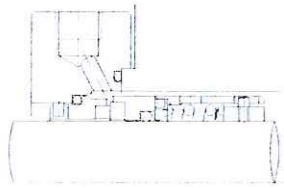
- .....Adhesive Liquid, Polymerized Liquid Slurry

注：圧力、周速限界はそれぞれの最大値を表していますので、選定にはご注意ください。  
Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

## TYPE PEU, PFU



〔基本構造〕 Construction



## 特長

耐食、耐スラリに強いワンコイルスプリングシールで、シールの回転トルク伝達にクラッチ機構を採用し、スプリング駆動の欠点をカバーしたシールです。高粘度液用として同様な構造のナイフエッジシールもあります。(形式: PEL, PFL: 圧力 0.5MPa)

## Features

The mechanical seal of this type is one-coil spring seal providing excellent resistance against corrosion and slurry. It is a seal which adopts the clutch mechanism for transmission of seal rotating torque, to make up for the disadvantage of spring drive. The knife edge seal of similar construction is also available to the high-viscosity liquid. (Type: PEL, PFL, pressure: 0.5MPa)

## ●性能

.....圧力: 1.3 MPa  
.....周速: 15 m/s

## ●呼び径

.....φ20~φ130

## ●用途

.....高粘度液、スラリ混入液、  
.....結晶性液

## ●Performance

.....Pressure: 1.3 MPa  
.....Speed: 15 m/s

## ●Nominal Size

.....φ20~φ130

## ●Application

.....High Viscosity Liquid, Slurry,  
.....Crystalline Solution

## 特長

上記 PEU, PFU 形のバランス形シールです。高粘度液用として同様な構造のナイフエッジシールもあります。(形式: PEK, PFK: 圧力 1.0MPa)

## Features

The mechanical seal of this type is a balance seal for type PEU and type PFU described above. The knife edge seal of similar construction is also available to the high-viscosity liquid. (Type: PEK, PFK, pressure: 1.0MPa)

## ●性能

.....圧力: 3.0 MPa  
.....周速: 15 m/s

## ●呼び径

.....φ22~φ130

## ●用途

.....高粘度液、スラリ混入液、  
.....結晶性液

## ●Performance

.....Pressure: 3.0 MPa  
.....Speed: 15 m/s

## ●Nominal Size

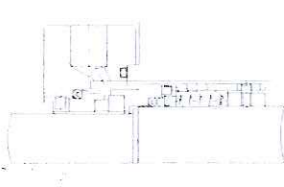
.....φ22~φ130

## ●Application

.....High Viscosity Liquid, Slurry,  
.....Crystalline Solution

## TYPE PEB, PFB

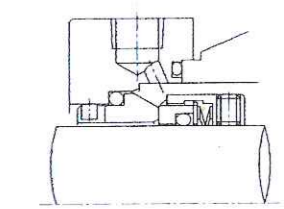
〔基本構造〕 Construction



## TYPE VEU, VFU



〔基本構造〕 Construction



## 特長

ISO、規格のポンプに適用可能です。板バネの使用により軸方向の長さが短くできています。流体の滞留が少なく、食品用にも有利なシールです。高粘度用に同様な構造のナイフエッジシールもあります。(形式: VEL, VFL: 圧力 0.5MPa)

## Features

The mechanical seal of this type is applicable to the pump of ISO code. It is designed for shorter length in axial direction, as it uses a leaf spring. It is accompanied by little fluid accumulation, and is advantageous to food use. The knife edge seal of similar construction is also available to the high-viscosity liquid. (Type: VEL, VFL, pressure: 0.5MPa)

## ●性能

.....圧力: 0.9 MPa  
.....周速: 15 m/s

## ●呼び径

.....φ18~φ45

## ●用途

.....サニタリーポンプ、ギヤポンプ

## ●Performance

.....Pressure: 0.9 MPa  
.....Speed: 15 m/s

## ●Nominal Size

.....φ18~φ45

## ●Application

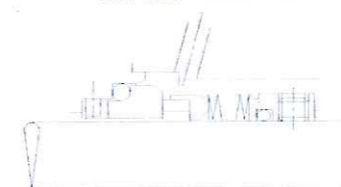
.....Sanitary Pumps, Gear Pumps

注: 圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。  
Note: It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

## TYPE WBR70



〔基本構造〕 Construction



## 特長

ISO、DIN規格のポンプにも装着可能な回転形金属ベローズシールで、軸パッキンタイプでの作動不良対策に効果を発揮します。ベローズ材質は、インコネルを使用しており広範囲の流体に使用可能です。

## Features

The bellows pack is a rotary type metal bellows seal that can be also attached to the pump compatible to ISO or DIN, and can provide the effect for countermeasure against operation failure of shaft packing type.

Since the inconel is used for bellows material, it can be applicable to a wide range of fluid.

## ●性能

.....圧力: max. 2.0 MPa  
.....周速: max. 25 m/s  
.....温度: max. -50 ~ +180 °C

## ●呼び径

.....φ20~φ100

## ●用途

.....ユーティリティポンプ、中低圧ポンプ

## ●Performance

.....Pressure: max. 2 MPa  
.....Speed: max. 25 m/s  
.....Temperature: max. -50 ~ +180 °C

## ●Nominal Size

.....φ20~φ100

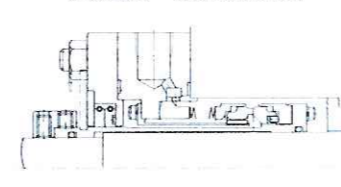
## ●Application

.....Utility Pump, Middle Pressure Pump

## TYPE QBS



〔基本構造〕 Construction



## 特長

耐圧性に優れた溶接金属 2重ベローズを用いた静止形シールで、軸パッキンを用いていないため追随性に優れていると共に、パッキン材の耐熱限界を考慮する必要がなく、高温用に適しています。

## Features

The mechanical seal of this type is a stationary type seal, using a double bellows of welded metal without no shaft packing, which provides the excellent resistance against pressure. Since it provides the excellent follow-up performance and does not require any consideration for heat resistance limit of packing material, it is suitable to high-temperature use.

## ●性能

.....圧力: 3.0 MPa  
.....周速: 60 m/s 温度: 450°C

## ●呼び径

.....φ23~φ180

## ●用途

.....高温、低温、高速、高圧用の  
.....高負荷ポンプ

## ●Performance

.....Pressure: 3.0 MPa  
.....Speed: 60 m/s Temp.: 450°C

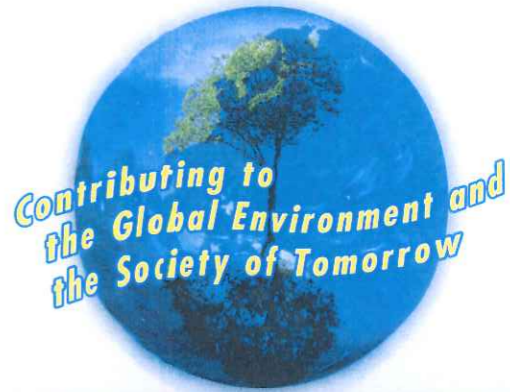
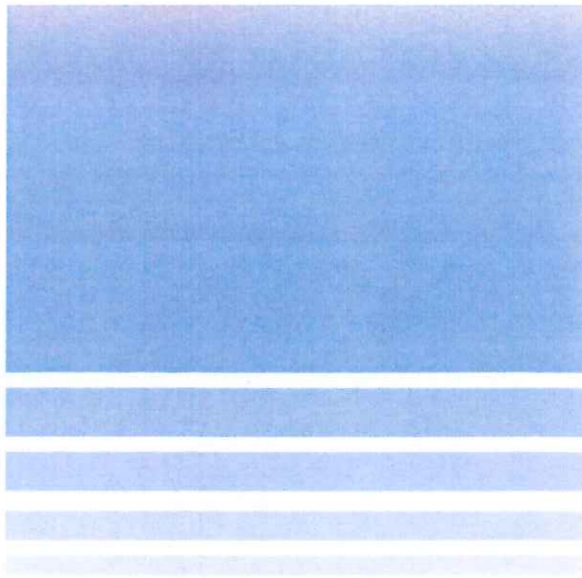
## ●Nominal Size

.....φ23~φ180

## ●Application

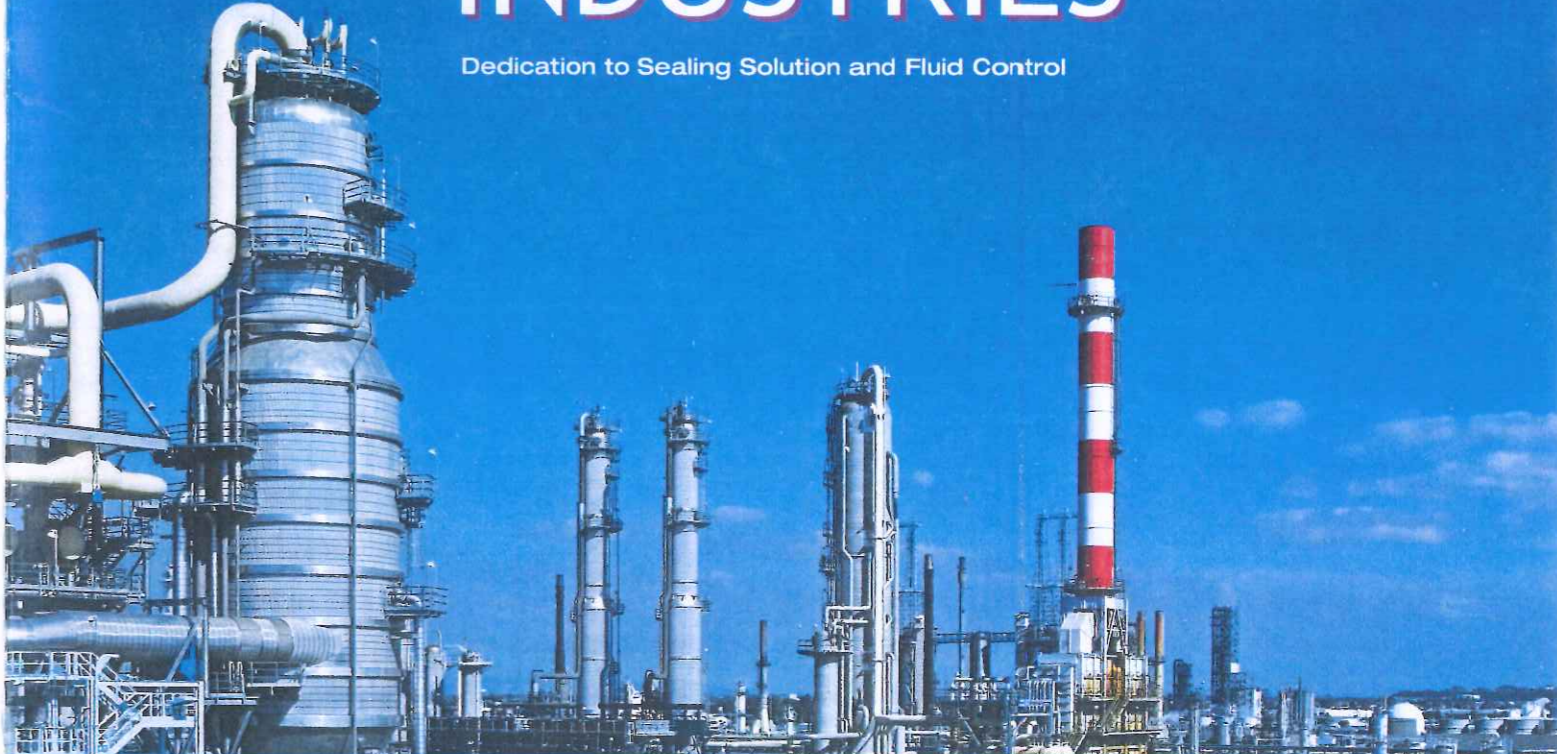
.....High Temperature, Low Temperature  
.....High Velocity, High Pressure

注: 圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。  
Note: It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.



# Pillar Products for OIL and GAS INDUSTRIES

Dedication to Sealing Solution and Fluid Control



Follow the instructions, before installation and operation, for your safety.  
\* Specifications and dimensions are subject to change without prior notice.  
\* The data on this catalogue are solely for your reference and are not to be construed as constituting a warranty.  
\* EDP® and PILLARFOIL® are registered trademark of Nippon Pillar Packing Co., Ltd.

### NIPPON PILLAR PACKING CO., LTD.

11-48,2-Chome, Nonaka Minami,  
Yodogawa-ku, Osaka, 532-0022 Japan  
TEL +81 6 6305 2821  
FAX +81 6 6302 3300  
(URL) <http://www.pillar.co.jp>

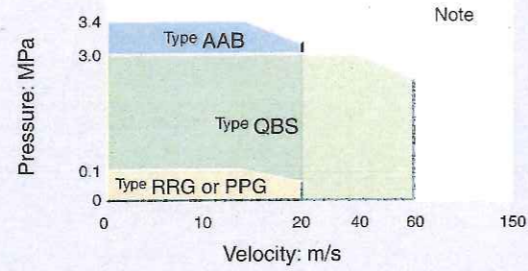


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CAT. No.00104004A-1 1401(Kc)1

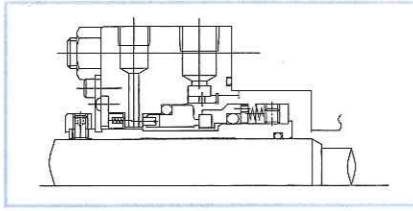
## Selection of seal for pump



## Mechanical Seals

### Type AAB

#### Rotating multi-spring seal



SiC (Tungsten Carboide) vs Carbon & Fluoro Elastomer, 316 SS

#### Features & Benefits

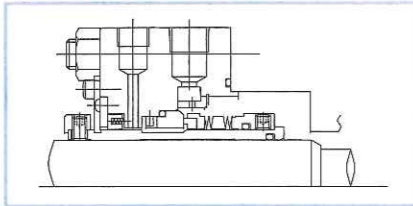
The mechanical seal of this type is a typical balance seal of Pillar seals, used for any industries since olden times. It uses the standardized rotating seal to be compatible to the dimension, construction and application of equipment used, and used multi-spring to demonstrate the stabilized performance in a wide range of application. This model is categorized in API 682. Seal type A

#### Performance

Pressure: 4.2MPa (610psi), Velocity: 20m/s, Nom.size:  $\phi$ 20-250  
Application: Process pump, Mixer, Blower

### Type WQR

#### Rotating welded metal bellows Seal



SiC vs Carbon & Fluoro Elastomer, 316 SS

#### Features & Benefits

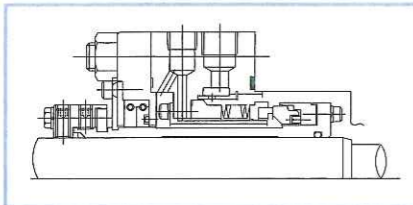
The bellows pack is a rotary type metal bellows seal that can be also attached to the pump compatible to ISO or DIN, and can provide the effect for countermeasure against operation failure of shaft packing type. Since the Inconel is used for bellows material, it can be applicable to a wide of fluid. This model is categorized in API 682. Seal type B

#### Performance

Pressure: 2.0MPa (290psi), Velocity: 25m/s, Nom.size:  $\phi$ 20-100  
Application: Utility pump, Middle pressure pump

### Type QBS

#### Welded metal bellows Seal



SiC vs Carbon, 316 SS

#### Features & Benefits

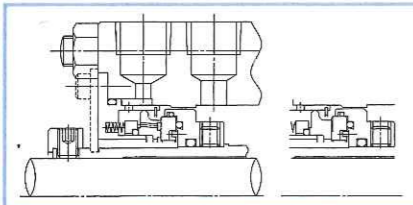
The mechanical seal of this type is a stationary type seal, using a double bellows of welded metal without no shaft packing, which provides the excellent resistance against pressure. Since it provides the excellent follow-up performance and does not require any consideration for heat resistance limit of packing material, it is suitable to high-temperature use. This model is categorized in API 682. Seal type C

#### Performance

Pressure: 3.0MPa (435psi), Velocity: 60m/s, Nom.size:  $\phi$ 23-180  
Application: High temperature liquid

### Type RRG.PPG

#### dry contact seal / dry gas seal



SiC vs. Premium Carbon & Fluoro Elastomer, 316 SS

#### Features & Benefits

These mechanical seal is used in tandem seal as containment seal. RRG: This is a dry contact seal. The seal ring is grooved for reduction of load and is impregnated with special lubricant, it can assure the stable sealing performance for a long time. PPG: This is a dry gas seal. The seal surface of rotating ring is uniquely grooved, to use the hydro dynamic pressure effectively by the multi-independent grooves. These arrangement are 2CW-CS in API 682.

#### Performance

Pressure: 0.1MPa (14.5psi), Velocity: 20m/s, Nom.size:  $\phi$ 20-130  
Application: Process pump

### Type Phoenix Seal®

#### Non-Contact dry gas seal

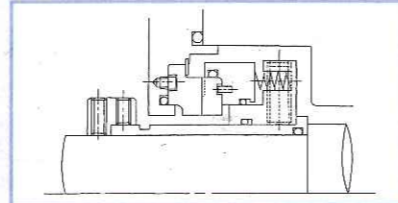
#### Features & Benefits

##### Bi-directional type non-contact dry gas seal

Multi-independent hydrodynamic pressure distribution generated by multi-independent grooves gives more stable seal performance.  
(US 5664748, 5529318 EU Pending)

#### Performance

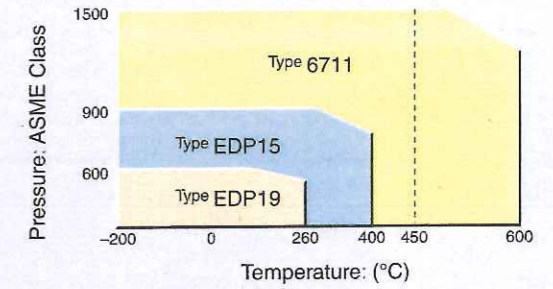
Pressure: 10MPa (1450psi), Velocity: 150m/s, Nom.size:  $\phi$ 50-200  
Application: Turbine, Blower, Compressor



Carbon vs SiC & Fluoro Elastomer, 316 SS

Note: When selecting the mechanical seal for range exceeding the conditions shown above, consult NIPPON PILLAR. It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

## Selection of valve packing



## Gland Packings

### Type EDP15\*

#### Pillarfoil® Braided Packing

#### Features & Benefits

Pillar style EDP 15/No. 6315CL-EDP15 is made from high grade flexible graphite Pillarfoil® yarn that is externally reinforced by Inconel wire mesh. The packing is treated with a special lubricant to ensure excellent sealability.

#### Performance

Temperature: -200 ~ +400°C (-328 ~ +750°F) \*  
Pressure: 15.5MPa (2200psi) ASME class 900  
pH: 0 to 14 (except strong oxidizers)

\* On the condition the temperature of the packing remains below +660°F (+350°C)



### Type EDP19\*

#### PTFE fiber Braided Packing for low torque



#### Features & Benefits

Pillar style EDP 19/No.4519 is manufactured with a carbon fiber core encapsulated by a pure PTFE braid. This unique combination gives you the outstanding characteristics of both carbon and PTFE.

#### Performance

Temperature: -29 ~ +260°C (-20 ~ +500°F)  
Pressure: 10.3MPa (1400psi) ASME class 600  
pH: 0 to 14

### Type 6711\*

#### Pillarfoil® Braided Packing

#### Features & Benefits

Pillar style No. 6711 is made from a Pillarfoil® yarn with braid over braid construction, reinforced by Inconel wire.

#### Performance

Temperature: -200 ~ +600°C (-328 ~ +1100°F) \*  
Pressure: 25.9MPa (3700psi) ASME class 1500  
pH: 0 to 14 (except strong oxidizers)

\* In steam +840°F(+450°C) atmosphere



### Type 6501L

#### Carbonized fiber packing



#### Features & Benefits

Pillar style No. 6501L is a square braid packing made from Pillar carbonized yarn impregnated with a PTFE dispersion and lubricant.

#### Performance

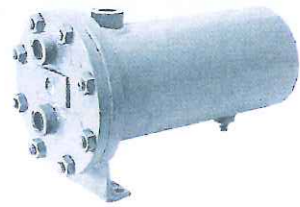
Temperature: ~ +200°C (~ +390°F) \*  
Pressure: 1.0MPa (140psi)  
Shaft speed: 20m/s (4000rpm)  
PV: 9.8MPa · m/s  
pH: 2 to 12 (except strong oxidizers)

\* For fluid exceeding +176°F(+80°C), the cooling unit is to be attached



\* These products have gotten the patent

フラッシングクーラ

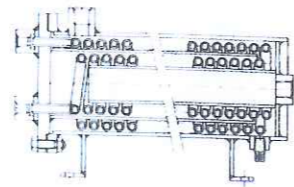


【特長】

高温流体の場合にメカニカルシールを保護するため、フラッシングラインに設置されます。伝熱管は各流体に適用できるように、各種用意しています。

TYPE	伝熱面積
HE-5S	0.25m <sup>2</sup>
HE-5A	0.4 m <sup>2</sup>
HE-5B	0.6 m <sup>2</sup>
HE-5C	0.8 m <sup>2</sup>

【基本構造】 Construction



Cooler

Features

The flushing cooler is installed at the flushing line, to protect the mechanical seal for case when the high-temperature fluid is used. Each type of heat transfer pipe is prepared, to be applicable to each fluid.

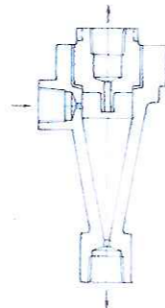
サイクロンセパレータ



【特長】

メカニカルシールをスラリーから保護するため、シールボックスへのフラッシングラインに設置します。フラッシング流体を円錐状の本体に注入し旋回運動で遠心力を加えることにより固形粒子を分離し排出します。

【基本構造】 Construction

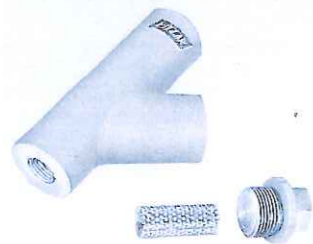


Cyclone Separator

Features

The cyclone separator is arranged at the flushing line leading to the seal box, to protect the mechanical seal box from slurry. The flushing fluid is poured in the conical main unit, and is applied with centrifugal force by executing the turning operation, to separate and discharge the solid particle.

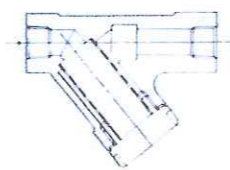
Y形ストレーナ



【特長】

メカニカルシールをスラリーから保護するため、シールボックスへのフラッシングラインに設置します。スラリーは内蔵されている網により除去されます。

【基本構造】 Construction



Type-Y Strainer

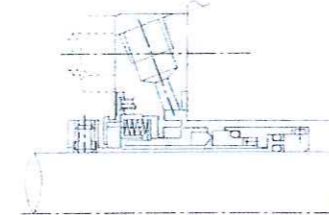
Features

The type-Y strainer is arranged at the flushing line leading to the seal box, to protect the mechanical seal box from slurry. The slurry is removed by the built-in net.

TYPE GAKEM



【基本構造】 Construction



特長

ナイフエッジシールを標準採用しており、清水から高粘度流体、スラリー液まで幅広い流体に適用が可能です。シール端面材料は耐摩耗・耐薬品性に優れた SiC を採用し長寿命が期待出来ます。またコンパクトな設計になっており ISO、DIN 規格のポンプにもそのまま装着が可能です。

Features

Since this seal uses knife edge seal for mating ring, it provides the stabilized performance against high viscosity and slurry liquid. Mating ring is made of SiC, which provide excellent resistance against corrosion and wear. The mechanical seal of this type is seal designed to be applicable to the pump of ISO and DIN code.

●性能

.....圧力：1.0 MPa  
.....周速：20 m/s

●呼び径

.....φ20～φ100

●用途

.....プロセス用ポンプ、ケミカルポンプ

●Performance

.....Pressure : 1.0 MPa  
.....Speed : 20 m/s

●Nominal Size

.....φ20～φ100

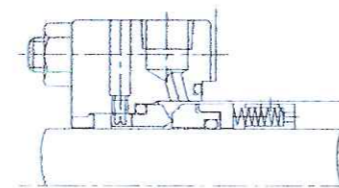
●Application

.....Process Pump, Chemical Pump

TYPE TEL8M



【基本構造】 Construction



特長

シールリングに SiC を単体で使用し、ドライブカラに放射状の溝を設けたマルチスプリング形メカニカルシールです。金属部品は SUS316 で構成しており、酸・アルカリ溶液・微粒子を含む流体のほか広範囲の流体に使用可能です。

Features

This seal is multi spring type seal with solid SiC seal ring and radial grooves on the drive collar. SUS316 is used for metal parts which is applicable to acid, alkaline and wide range liquid.

●性能

.....圧力：0.5 MPa  
.....周速：10 m/s

●呼び径

.....φ20～φ55

●用途

.....プロセス用ポンプ、ケミカルポンプ

●Performance

.....Pressure : 0.5 MPa  
.....Speed : 10m/s

●Nominal Size

.....φ20～φ55

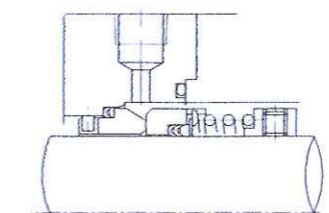
●Application

.....Process Pump, Chemical Pump

TYPE CEU, CFU



【基本構造】 Construction



特長

ISO 規格のポンプに適用できるように設計され、摺動材に SiC を標準採用したワンコイルスプリングシールで、ケミカル液に適しています。高粘度液用として同様な構造のナイフエッジシールもあります。(形式：CEL, CFL：圧力 0.5MPa)

Features

The mechanical seal of this type is a one-coil spring seal of which mating material generally uses SiC, so designed as to be applicable to the pump of ISO standard, and is suitable to the chemical liquid. The knife edge seal of slimier construction is also available to the high-viscosity liquid. (Type: CEL, CFL Pressure: 0.5MPa)

●性能

.....圧力：0.9 MPa  
.....周速：15 m/s

●呼び径

.....φ18～φ55

●用途

.....プロセス用ポンプ、ケミカルポンプ

●Performance

.....Pressure : 0.9 MPa  
.....Speed : 15 m/s

●Nominal Size

.....φ18～φ55

●Application

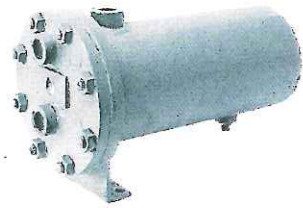
.....Process Pumps, Chemical Pumps

注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。

Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.



フラッシングクーラ

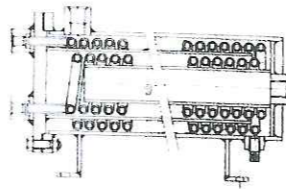


【特長】

高温流体の場合にメカニカルシールを保護するため、フラッシングラインに設置されます。伝熱管は各流体に適用できるように、各種用意しています。

TYPE	伝熱面積
HE-5S	0.25m <sup>2</sup>
HE-5A	0.4 m <sup>2</sup>
HE-5B	0.6 m <sup>2</sup>
HE-5C	0.8 m <sup>2</sup>

【基本構造】 Construction



Cooler

Features

The flushing cooler is installed at the flushing line, to protect the mechanical seal for case when the high-temperature fluid is used. Each type of heat transfer pipe is prepared, to be applicable to each fluid.

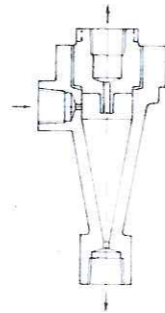
サイクロンセパレータ



【特長】

メカニカルシールをスラリーから保護するため、シールボックスへのフラッシングラインに設置します。フラッシング流体を円錐状の本体に注入し旋回運動で遠心力を加えることにより固形粒子を分離し排出します。

【基本構造】 Construction



Cyclone Sepalator

Features

The cyclone sepalator is arranged at the flushing line leading to the seal box, to protect the mechanical seal box from slurry. The flushing fluid is poured in the conical main unit, and is applied with centrifugal force by executing the turning operation, to separate and discharge the solid particle.

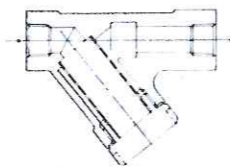
Y形ストレーナ



【特長】

メカニカルシールをスラリーから保護するため、シールボックスへのフラッシングラインに設置します。スラリーは内蔵されている網により除去されます。

【基本構造】 Construction



Type-Y Strainer

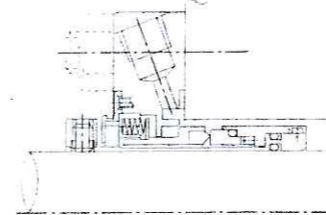
Features

The type-Y strainer is arranged at the flushing line leading to the seal box, to protect the mechanical seal box from slurry. The slurry is removed by the built-in net.

TYPE GAKEM



【基本構造】 Construction



特長

ナイフエッジシールを標準採用しており、清水から高粘度流体、スラリー液まで幅広い流体に適用が可能です。シール端面材料は耐摩耗・耐薬品性に優れたSiCを採用し長寿命が期待出来ます。またコンパクトな設計になっておりISO、DIN規格のポンプにもそのまま装着が可能です。

Features

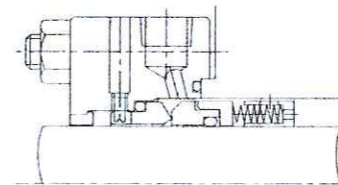
Since this seal uses knife edge seal for mating ring, it provides the stabilized performance against high viscosity and slurry liquid. Mating ring is made of SiC, which provide excellent resistance against corrosion and wear. The mechanical seal of this type is seal designed to be applicable to the pump of ISO and DIN code.

- |                       |                                  |
|-----------------------|----------------------------------|
| ●性能                   | ●Performance                     |
| .....圧力：1.0 MPa       | .....Pressure : 1.0 MPa          |
| .....周速：20 m/s        | .....Speed : 20 m/s              |
| ●呼び径                  | ●Nominal Size                    |
| .....φ20～φ100         | .....φ20～φ100                    |
| ●用途                   | ●Application                     |
| .....プロセス用ポンプ、ケミカルポンプ | .....Process Pump, Chemical Pump |

TYPE TEL8M



【基本構造】 Construction



特長

シールリングにSiCを単体で使用し、ドライブカラに放射状の溝を設けたマルチスプリング形メカニカルシールです。金属部品はSUS316で構成しており、酸・アルカリ溶液・微粒子を含む流体のほか広範囲の流体に使用可能です。

Features

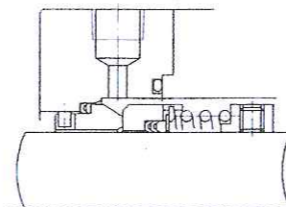
This seal is multi spring type seal with solid SiC seal ring and radial grooves on the drive collar. SUS316 is used for metal parts which is applicable to acid, alkaline and wide range liquid.

- |                       |                                  |
|-----------------------|----------------------------------|
| ●性能                   | ●Performance                     |
| .....圧力：0.5 MPa       | .....Pressure : 0.5 MPa          |
| .....周速：10 m/s        | .....Speed : 10m/s               |
| ●呼び径                  | ●Nominal Size                    |
| .....φ20～φ55          | .....φ20～φ55                     |
| ●用途                   | ●Application                     |
| .....プロセス用ポンプ、ケミカルポンプ | .....Process Pump, Chemical Pump |

TYPE CEU, CFU



【基本構造】 Construction



特長

ISO規格のポンプに適用できるように設計され、摺動材にSiCを標準採用したワンコイルスプリングシールで、ケミカル液に適しています。高粘度液用として同様な構造のナイフエッジシールもあります。(形式：CEL, CFL：圧力0.5MPa)

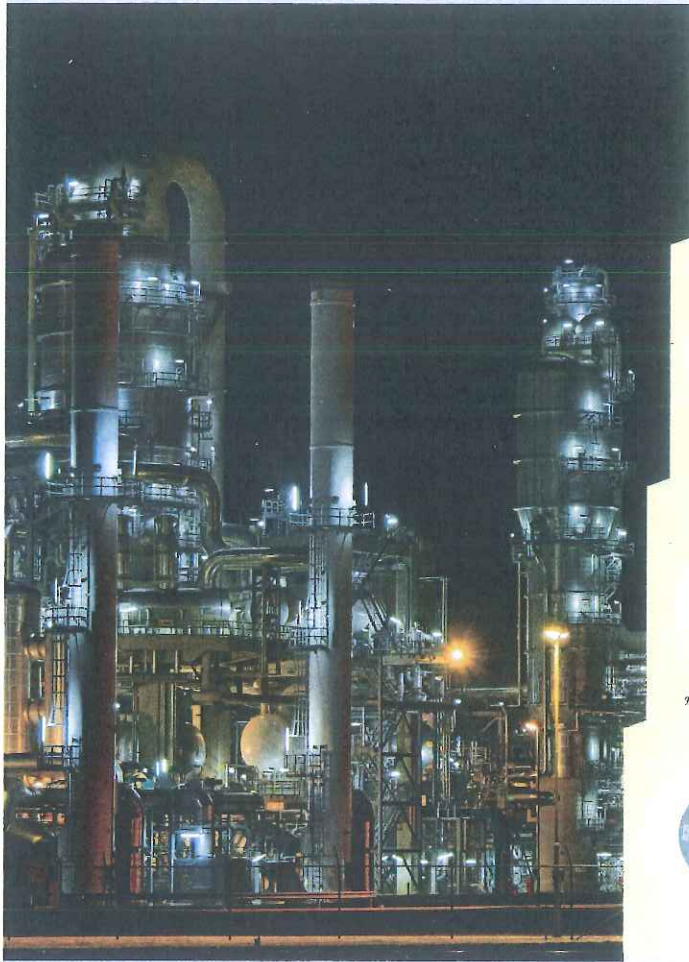
Features

The mechanical seal of this type is a one-coil spring seal of which mating material generally uses SiC, so designed as to be applicable to the pump of ISO standard, and is suitable to the chemical liquid. The knife edge seal of slimilar construction is also available to the high-viscosity liquid. (Type: CEL, CFL Pressure: 0.5MPa)

- |                       |                                    |
|-----------------------|------------------------------------|
| ●性能                   | ●Performance                       |
| .....圧力：0.9 MPa       | .....Pressure : 0.9 MPa            |
| .....周速：15 m/s        | .....Speed : 15 m/s                |
| ●呼び径                  | ●Nominal Size                      |
| .....φ18～φ55          | .....φ18～φ55                       |
| ●用途                   | ●Application                       |
| .....プロセス用ポンプ、ケミカルポンプ | .....Process Pumps, Chemical Pumps |

注：圧力、周速限界はそれぞれ最大値を表していますので、選定にはご注意ください。  
Note : It is advised to select the mechanical seal of proper type carefully, as the pressure and peripheral speed limits indicate the maximum value respectively.

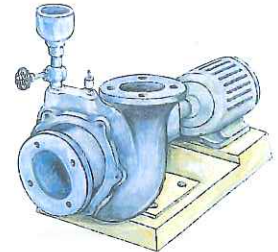
# PILLAR Products in Process of REFINERY and PETROCHEMICAL Plants



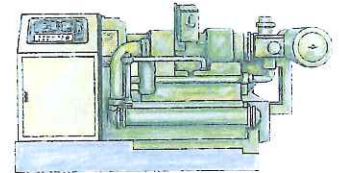
EDP15



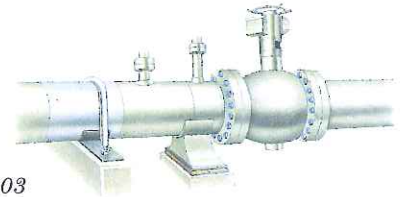
Type QBS



Type PHOENIX SEAL



Type 2603



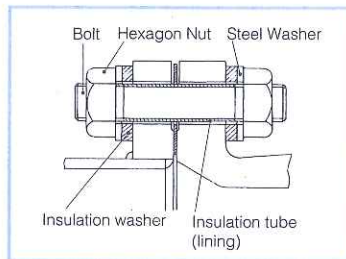
## PTFE Products

### Type 4650(H)



Code: PF-4650(H)-ANSI - (Size) LB - (Size)"

#### AC bolts



#### Features & Benefits

##### Lined with hard Pilaflon®

With insulation washers and gaskets, it is to prevent galvanic corrosion which may be generated on different metal flanges. PFA insulation diameter is smaller than thread diameter, so enable easy insertion work.

#### Performance

Temperature: -196~200°C (-320~+390°F)  
Application: Flanges for pipe, Equipment

### Type 4801

#### Features & Benefits

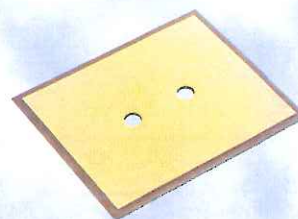
##### To accommodate relative sliding of equipment

Fluorogold® is a high load slide bearing to accommodate relative movement by earthquakes, temperature difference, wind and so on.

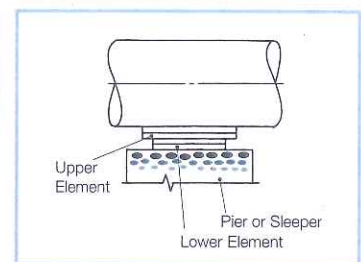
#### Performance

Load: 0.5~13.7MPa (75~2000psi), Temperature: -60~200°C (-76~+392°F)  
Application: Support for pipe, Equipment, Iron structure and apparatus

#### FLUOROGOLD® Slide Bearing

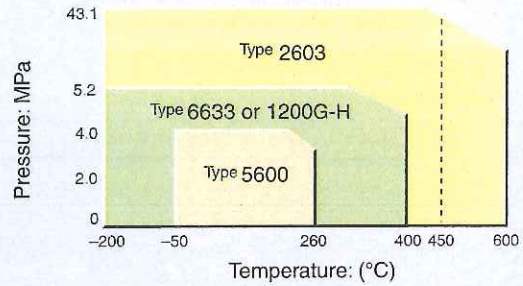


Code: PF-4801-FC-1010-CS 15L (width) × (length)



Carbon steel and PTFE

## Selection of gasket



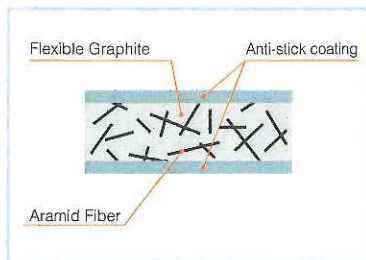
## Gaskets

### Type 5600



Code: VG-5600 - (thickness) × (width) × (length)

### Non-asbestos joint sheet (for general application)



#### Features & Benefits

Pillar style 5600 is joint sheet gasket which is compounded from flexible graphite, inorganic-fiber and aramid-fiber with rubber binder. This has superior flexibility and easy to handle. Additionally we have various size of sheets, also for large size equipment.

#### Performance

Temperature: -50~260°C (-58~+500°F)  
 Pressure: 4.0MPa (580psi)  
 Application: Flanges for pipe, Equipment

### Type 6633

#### Features & Benefits

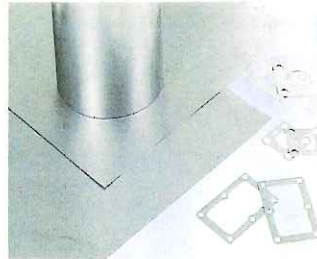
Flexible Graphite sheet reinforced by stainless steel foil.

This has superior heat resistance and flexibility as well as sealability, and easy to handle.

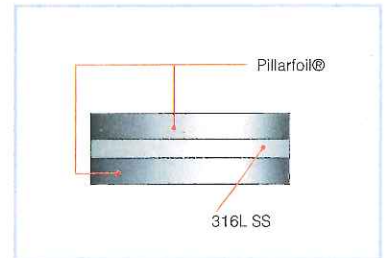
#### Performance

Temperature: -200~400°C (-328~+750°F), Pressure: 5.2MPa (754psi)  
 Application: Flanges for pipe, Equipment

### Metalfoil inserted Pillarfoil® Sheet



Code: VG-6633 - (thickness) × (width) × (length)



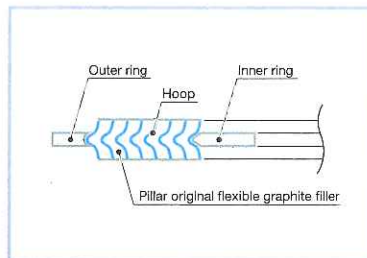
### Type 2603



Code: Standard  
 With inner ring  
 With inner/outer ring

VG-2600-EEO-ANSI (Size) LB-00\*  
 VG-2601-EEO-ANSI (Size) LB-00\*  
 VG-2603-EEE-ANSI (Size) LB-00\*

### Pillarfoil® spiral wound gasket



#### Features & Benefits

#### Spiral wound gasket using Pillarfoil filler

It is superior in gas sealability, heat resistance and chemical resistance. It can be used in vacuum, LNG, nuclear application as well as general application.

#### Performance

Temperature: -200~600°C (-328~+1110°F)\*  
 Pressure: 43.1MPa (6250psi)  
 Application: Flanges for pipe, Equipment  
 \* in steam +840°F(+450°C) atmosphere

### Type 1200G-H\*

### Corrugated Metal with flexible graphite Cover

#### Features & Benefits

Pillar style 1200G-H is a gasket of such construction that the special Pillarfoil sheet is laminated on both surfaces of metal sheet which is corrugated to concentric form.

#### Performance

Temperature: -200~400°C (-328~+750°F), Pressure: 5.2MPa (754psi)  
 Application: Flanges for pipe, Equipment

