

Title: SPECIFICATION FOR CLEAN QUARTER-TURN VALVES

**SPECIFICATION FOR  
CLEAN QUARTER-TURN VALVES  
FOR  
LIGO VACUUM EQUIPMENT**

Hanford, Washington  
and  
Livingston, Louisiana

PREPARED BY: Thomas M. Stan

PROCESS ENGINEER: Robert Thum

QUALITY ASSURANCE: Alan & Bradbrook

TECHNICAL DIRECTOR: D.C. McWilliams

PROJECT MANAGER: Pat Bayley

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2	REC, 07/10/97	D.M.W. 7-10-97	REVISED FOR PURCHASE TO ADD QTY. 12 - 1/2" VALVES DEO 0520
1	TMS 9-25-96	D.M.W. 9-26-96	REVISED FOR PURCHASE PER DEO 0274
0	TMS 3-1-96	D.M.W. 3-5-96	RELEASED FOR QUOTE PER DEO 077

REV LTR.	BY-DATE	APPD. DATE	DESCRIPTION OF CHANGE
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<b>PROCESS SYSTEMS INTERNATIONAL, INC.</b>				<b>SPECIFICATION</b>	
INITIAL APPROVALS	PREPARED	DATE	APPROVED	DATE	Number <b>V049-2-060</b>
	T.M. Stan	3-1-96	RES		Rev. <b>2</b>
					A LIGO-8970136-02-V

Title:

# SPECIFICATION FOR CLEAN QUARTER-TURN VALVES

## SPECIFICATION TABLE OF CONTENTS

- 1.0 Scope
- 2.0 Schedule
- 3.0 Design Requirements
- 4.0 Required Documentation
- 5.0 Shop Testing
- 6.0 Inspection

Attachment : MDC Catalog Cut

### 1.0 SCOPE

This specification covers the minimum requirements for the design, materials, fabrication, assembly, inspection, testing, preparation for shipping, shipment and delivery of 2" clean quarter-turn valves for the LIGO vacuum system. These valves will be used in Federal Standard 209 Class 100 air service.

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	<u>Quantity</u>	<u>Date</u>	<u>PSI Part No.</u>
PSI, Westboro, MA:	21	11/29/96	V049BVCA20
PSI, Westboro, MA.	12	07/30/97	V049BVCA15 (80K purge)

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### 3.0 DESIGN REQUIREMENTS

- 3.1 The valves shall be either butterfly style, MDC Model No. BFV-200, MDC Part No. 360002.
- 3.2 The valves shall be 304 stainless steel.
- 3.3 End connections shall be CF flanges.
- 3.4 The valves shall be designed to seal in both directions.
- 3.5 The internal valve mechanisms shall be non-lubricated.
- 3.6 The valves shall be cleaned in accordance with the Vendor's standard procedure for valves intended for use in Federal Standard 209 Class 100 clean air service..
- 3.7 Valves shall be manually actuated.

### 4.0 REQUIRED DOCUMENTATION

Engineering drawings shall be submitted for approval prior to fabrication. Manufacturer's standard QA reports shall be provided prior to shipment:

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Manufacturer's standard testing shall be performed.

**6.0 INSPECTION**

The Vendor's standard inspections shall be performed. Also, each valve shall be visually inspected for cleanliness prior to shipment. Valves shall be recleaned if any contamination is found.

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## Butterfly Valves

**Del-Seal**  
Metal Seal Flange**Kwik-Flange**  
ISO O-Ring Flange

## FEATURES

- Quick open/Quick close
- Positive lock both positions
- Positive Viton® O-Ring vacuum seal
- High conductance
- Choice of *Del-Seal* or *Kwik-Flange*

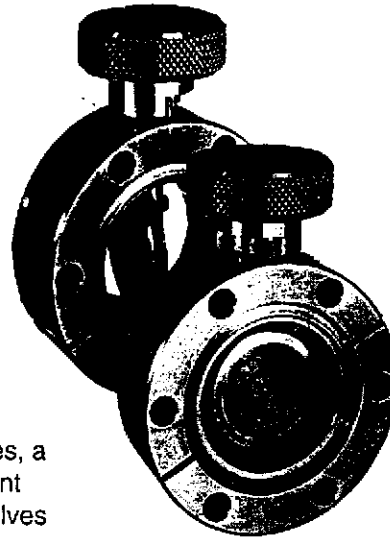
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MDC Butterfly Valves require only one-quarter turn rotation of the handle to go from fully open to the fully closed position. In the 1-1/3 Mini *Del-Seal* flange series, a spring loaded ball bearing becomes seated in an indent providing a positive mechanical stop. All other size valves employ a roll pin stop method.

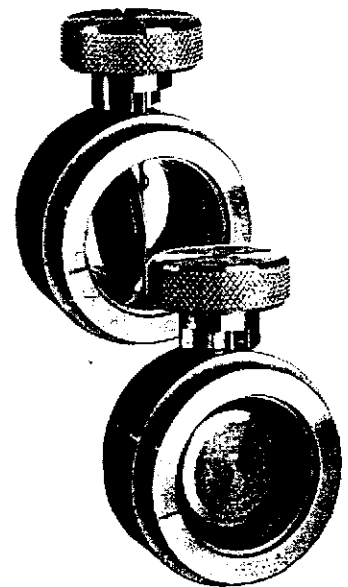
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MDC Butterfly Valves are low outgassing. All internal surfaces are machined from solid stainless steel bar stock. The handle is made of aluminum. A small O-ring on the stem prevents shaft leakage.

The valves are offered with a choice of *Del-Seal* ultra-high vacuum metal-seal flanges or ISO *Kwik-Flange* O-ring seal flanges.



*Del-Seal* Flange  
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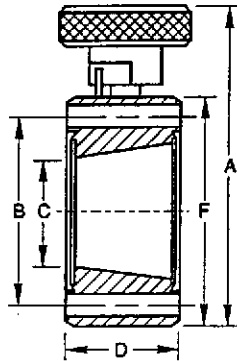
*Kwik-Flange* Flange  
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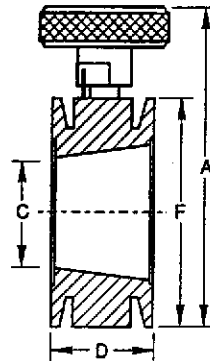
ATTACHMENT A  
TO V049-2-060

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Del-Seal Flange



Kwik-Flange Flange

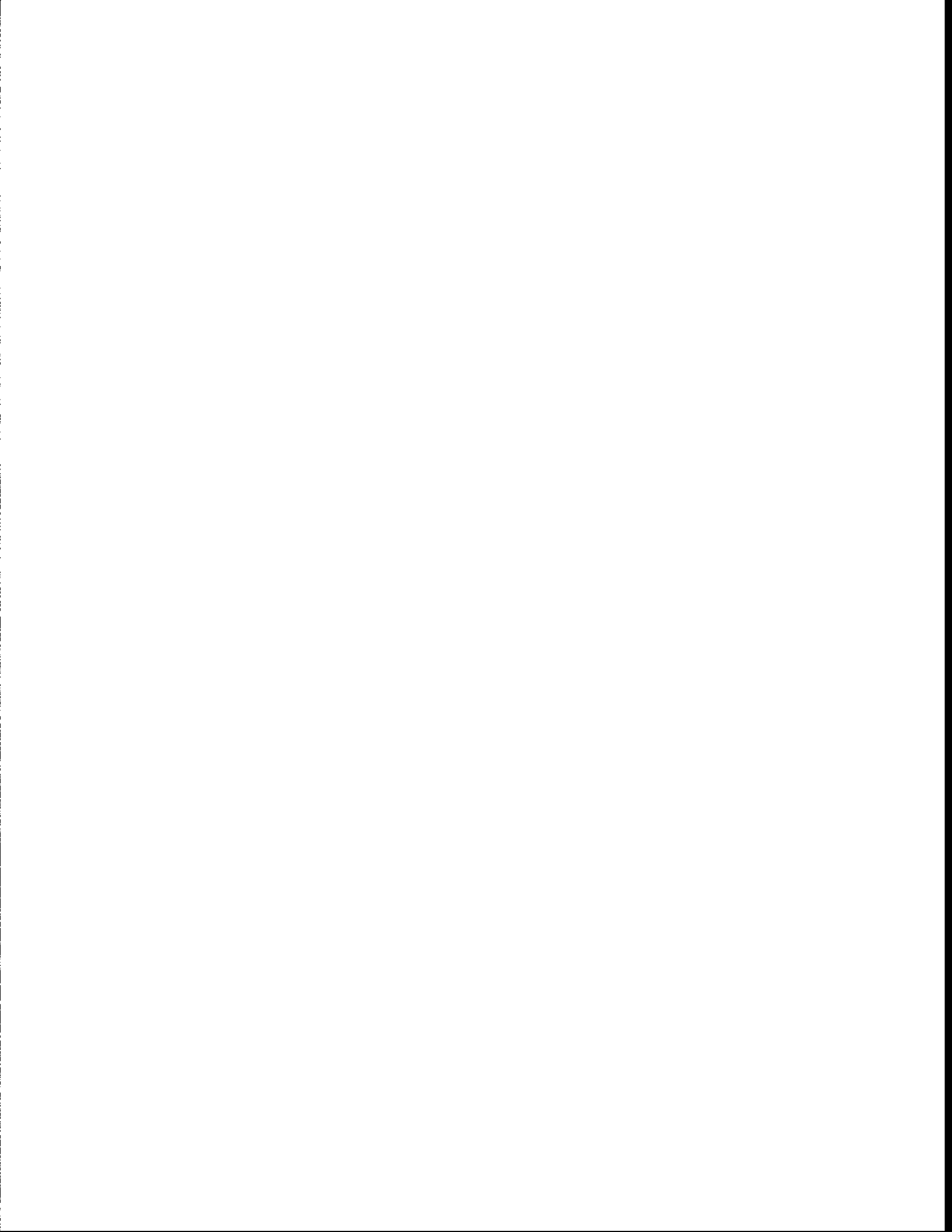
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Please order by Part Number

Valve Nom I.D. Size	Reference	Part Number	Flange F	Flange O.D.	Bolt Holes No.	Ref ISO	Height A	Bolt Circle B	C	Thickness D	Wt Lbs	Unit Price
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3/4	KBFV-075	360010	Kwik-Flange	1.18	-	NW16	1.81	-	.56	1.25	1	\$250
1	KBFV-100	360011	Kwik-Flange	1.57	-	NW25	2.32	-	.87	1.25	1	\$255
→ 1-1/2	BFV-150	360001	Del-Seal 2-3/4	2.73	6	-	3.81	2.312	1.33	1.00	1	\$260
1-1/2	KBFV-150	360012	Kwik-Flange	2.16	-	NW40	3.81	-	1.31	1.34	1	\$260
→ 2	BFV-200	360002	Del-Seal 3-3/8	3.37	8	-	4.46	2.850	1.84	1.00	2-1/2	\$360
2	KBFV-200	360013	Kwik-Flange	2.95	-	NW50	4.46	-	1.87	1.68	2-1/2	\$360

Dimensions are in inches





**ATTACHMENT "C"**

**TO**

**V049-2-178**

**SPECIFICATION FOR CLEAN QUARTER TURN VALVES**

**V049-2-060**

**ATTACHMENT**

Number:

**A V049-2-178**

Rev.

*file as: L190-E970136-02-V*



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	T.M. Stern	3-1-96	RES		V049-2-060 A	2

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Valves

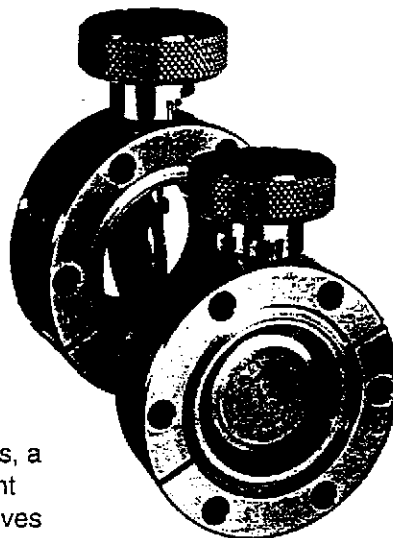
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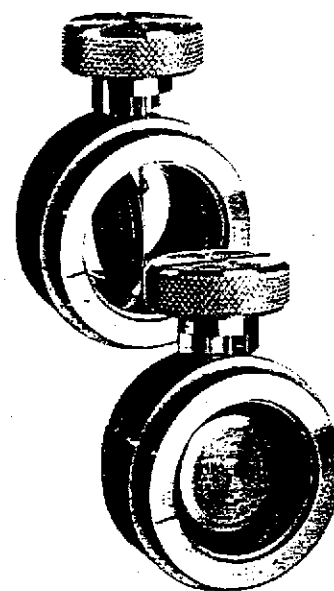
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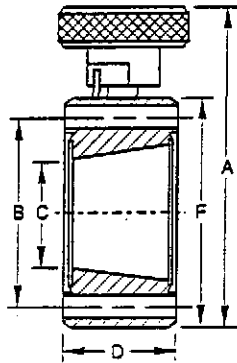
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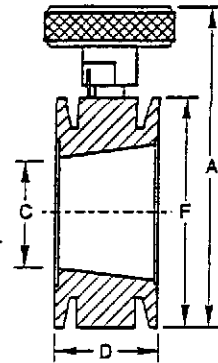
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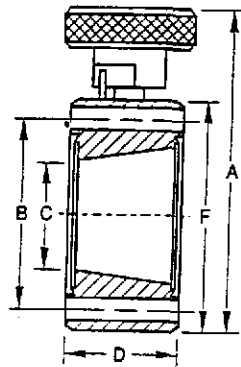
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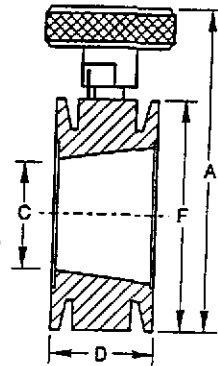
ATTACHMENT A  
To V049-J-060

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SECTION  
**5.6**



Del-Seal Flange



Kwik-Flange Flange

Valves

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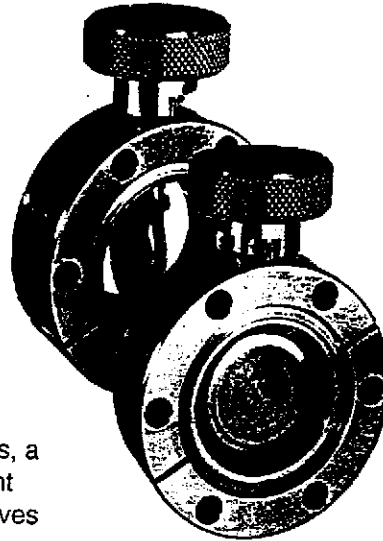
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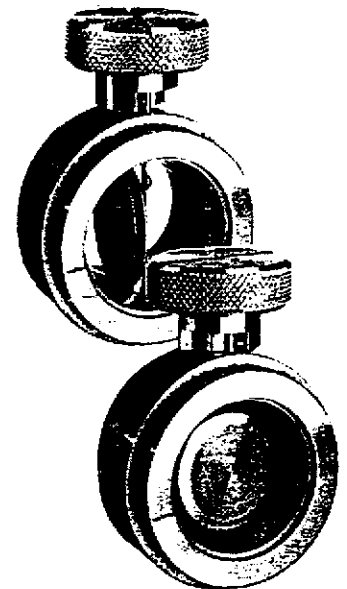
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