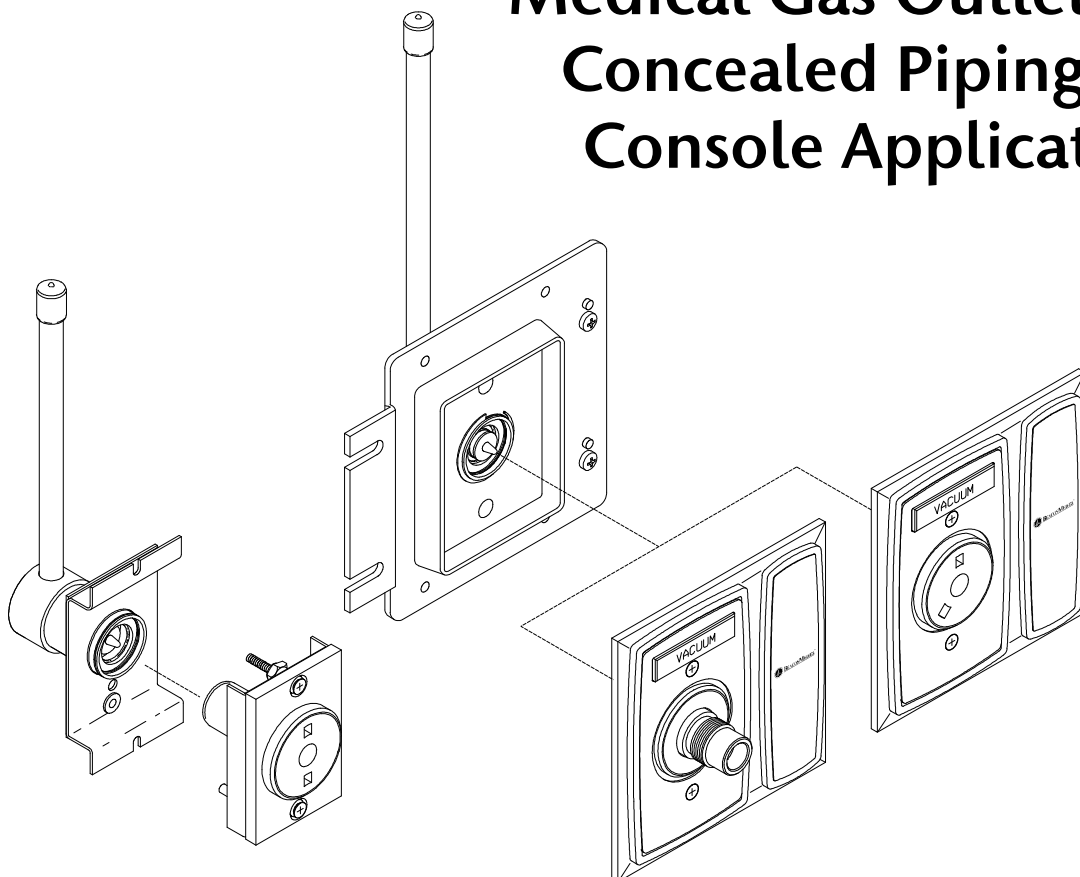


# Gemini, Diamond®II and Diamond®III Medical Gas Outlets for Concealed Piping and Console Applications



MAN01-049

Part number 847706-00 Rev. D00

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## Introduction

This manual provides information needed to service BeaconMedæ's Gemini, Diamond® II and Diamond® III Gas Outlets. Information contained in this manual is intended for use by technicians or personnel qualified to repair and service medical equipment.

## Definition of Statements

Statements in this manual preceded by the following words are of special significance.

 **WARNING:** Means there is a possibility of injury or death to yourself or others.

 **CAUTION:** Means there is a possibility of damage to the unit or other property.

**NOTE:** Indicates points of particular interest for more efficient and convenient operation.

## General Product Description

BeaconMedæ's medical gas and vacuum quickconnect outlets provide a means of connecting to medical gas piping system. When appropriate adapter is inserted into outlet, primary valve is opened, permitting gas flow. Mechanical latch secures adapter in outlet. Primary seal closes when adapter is removed.

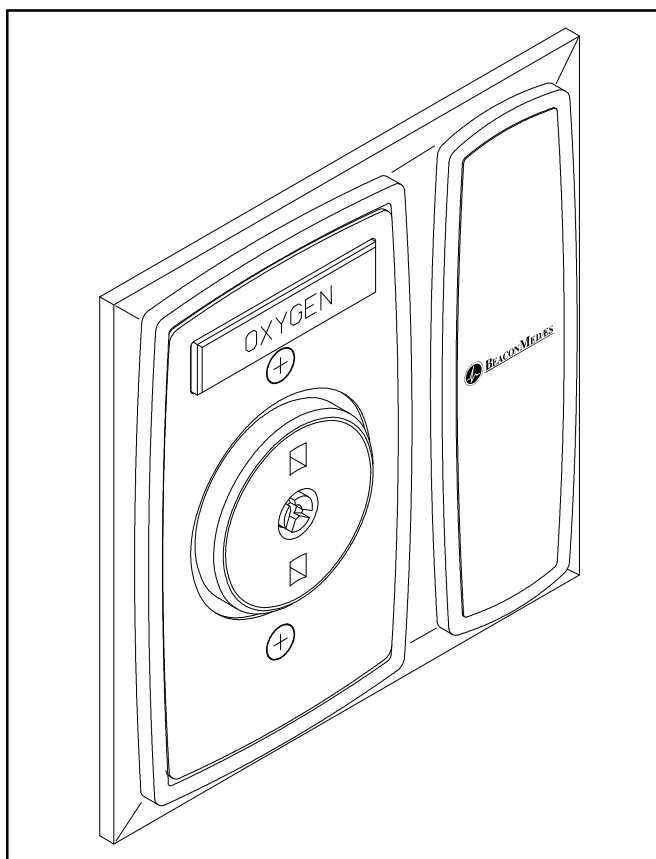
Outlets are typically for oxygen, nitrous oxide, air, or vacuum and have been cleaned for indicated service.



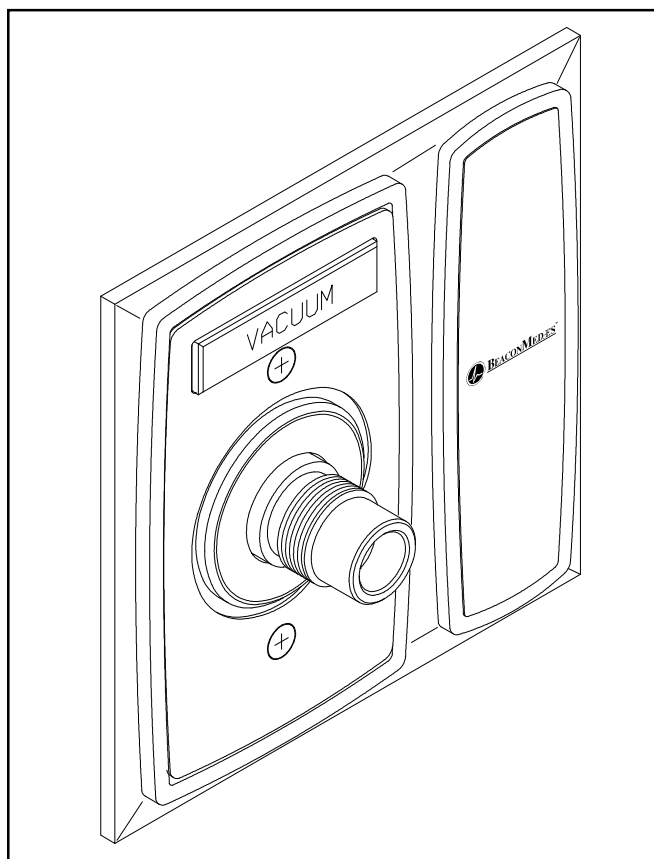
### **WARNING:**

Do not use oil on adapters or outlets.

DISS outlets are typically used in ceilings of operating rooms or in place of quick-connect outlets. Connection to outlet is by means of a nut and nipple. Gas-specific indexing to prevent accidental connection to wrong service is accomplished by a series of interference diameters in accordance with Diameter-Index Safety System (DISS) published by Compressed Gas Association (CGA) in Standard V-5. Nipple opens primary valve as nut is tightened to secure nipple in outlet. Primary valve closes when nipple is removed.



**Gemini Concealed Quick-Connect Front Body**



**Gemini Concealed DISS Front Body Description  
Manufacturer**

## Tools and Service Materials

<u>Description</u>	<u>Manufacturer</u>
Lubricant	Krytox® GPL206 BeaconMedæs P/N GRS01-007
No. 2 Phillips screwdriver	Local source
No. 2 Flat-blade screwdriver	Local source
Oxygen compatible leak detector solution	Sherlock or equivalent

## Cleaning and Lubrication

BeaconMedæs outlets are cleaned for oxygen or the indicated service. Exposed surfaces of outlets may be cleaned with a mild detergent solution or wiped with a disinfectant used for patient room surfaces that is compatible with acetal and nylon plastic, anodized aluminum, and die cast zinc.

Lubricate elastomer seals sparingly with Krytox® GPL206. Refer to Tools and Service Materials.

**DO NOT USE OIL.**

## Inspection and Testing

Medical gas outlets in high-use areas should be inspected at least every six months and more frequently if outlets are used daily. All outlets should be inspected at least once a year.

Follow National Fire Protection Association Standard 99, 99C "Gas and Vacuum Systems," and Canadian Standards Association, Standard Z 305.1 "Nonflammable Medical Gas Piping Systems" requirements and methods for periodic testing and maintenance of medical gas and vacuum systems.

## Outlet Identification

Before servicing medical gas outlets, it is very important to identify exact type and vintage of outlet.

### Wall Outlets

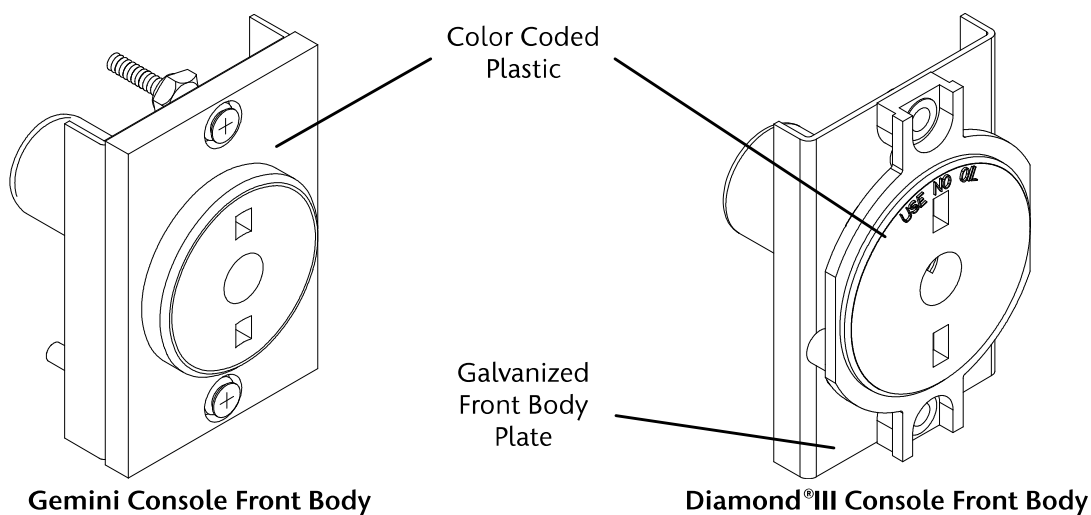
Gemini wall outlets are identified by a Beacon Medical or BeaconMedæ's logo on right hand side of outlet.

Diamond® III/DISS III wall/ceiling outlets may be identified by the words "Hill-Rom" or "Medæ's" cast into cover plate on lower right hand side and Model No. 300 series or 400 series on back side of cover plate.

Diamond® II wall/ceiling outlets are identified by Model A30 series on back side of cover plate.

### Console Outlets

Remove console cover plate to expose front body.



Gemini console outlets will appear as shown above. Front body will have a solid rectangle of color coded plastic approximately 1 7/8" wide x 2 3/4" tall. Raised circular keying portion of front body will rise approximately .200".

Diamond® III console outlets will appear as shown above. Front body will be easily identified by appearance of galvanized front body plate visible in corners.

## Diamond® II Medical Gas Outlets

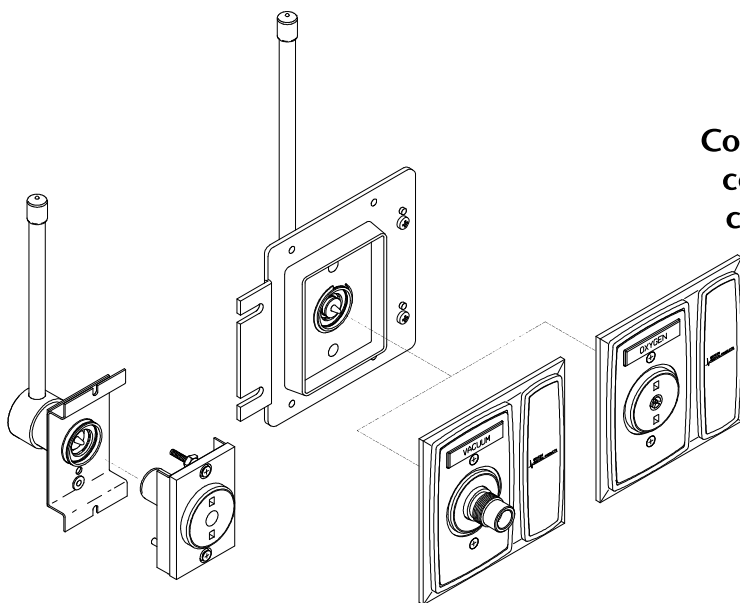
Diamond®II medical gas outlets must be upgraded to Gemini Medical gas outlets.

### Upgrade of Diamond II® Medical Gas Outlets

Rough-in assembly must be upgraded to accept Gemini front body. This requires installation of a new spring, secondary check, o-ring, rubber seal and retaining ring.

Order one Secondary Check Repair Kit, P/N 290802-PG for pressure service or 290803-PG for vacuum or WAGD service, and 10 each of Secondary Check, P/N 525344-00 for every 10 outlets to be upgraded Order one each of Gemini or DISS finish assembly (ref. page 6) for each corresponding gas service.

## Outlet Assembly Ordering



Complete assemblies for  
concealed piping and  
console applications.

### Gemini/Diamond® III Assembly Numbers

Outlet Type	Gas Service	Rough-in Assembly	Finish Assembly
Gemini Concealed Quick-Connect	Oxygen	234510-00	234610-00
	Nitrous Oxide	234511-00	234611-00
	Air	234512-00	234612-00
	Vacuum	234513-00	234613-00
	WAGD	234519-00	234619-00
	Vacuum Slide	234500-00	234600-00
	Blank	234500-00	234601-00
Gemini Concealed DISS	Oxygen	234510-00	234710-00
	Nitrous Oxide	234511-00	234711-00
	Air	234512-00	234712-00
	Vacuum	234513-00	234713-00
	Nitrogen	234514-00	234714-00
	WAGD	234519-00	234719-00
	Carbon Dioxide	234520-00	234720-00
Gemini Console* Quick-Connect	Oxygen	234410-00	234810-00
	Nitrous Oxide	234411-00	234811-00
	Air	234412-00	234812-00
	Vacuum	234413-00	234813-00
	WAGD	234419-00	234819-00
DISS Console*	Oxygen	234410-00	4107 2097 49
	Air	234412-00	4107 2097 51
	Vacuum	234413-00	4107 2097 50
Diamond® III Console* Quick-Connect	Oxygen	234410-00	4107 2097 45
	Nitrous Oxide	234411-00	4107 2097 46
	Air	234412-00	4107 2097 48
	Vacuum	234413-00	4107 2097 47

\* Finishing plates are not supplied with these assemblies.

## Service

Notify appropriate hospital personnel when performing service or maintenance to medical gas systems. Consult Troubleshooting Guide to determine required repair. Outlets incorporate a primary valve and secondary check. Secondary check prevents system gas from escaping when primary valve is removed for service. Refer to Replacement Components for identification of replacement part numbers.

### Quick-Connect and DISS Valve Assemblies (Primary Valve)

Quick-connect and DISS valves may be removed for replacement of seals and some components without interrupting service to other outlets in piping system. To check a quick connect or DISS valve for leaks, apply leak detector solution at primary valve opening both with and without adapter connected. Bubbles indicate pressure leaks. Large leaks may be audible.

#### **NOTE:**

Replace all elastomer seals whenever outlets are disassembled.

### Front Body

Disassembly of Gemini/Diamond® III/DISS III outlets for servicing and parts replacement is illustrated in exploded parts breakdown (pages 10 -12).

#### **NOTE:**

Gas supply need not be turned off when removing front body - secondary check and bushing in back body prevents flow from outlet.

Adapter locking spring on Gemini/Diamond® III front body housing, and front body o-ring, can be replaced by dismantling housing as follows:

1. Loosen two front body screws.

#### **NOTE:**

On recessed and surface mount outlet models, screws are held in place by rubber washers; console models use elastic stop nuts.

2. Carefully remove front body assembly from back body assembly.
3. Using needle-nose pliers, crush inside flange of brass eyelets and remove from assembly.
4. Remove and replace all worn or damaged parts.
5. New brass eyelets must be used when reassembling front body assembly. Insert eyelets and flare rear of each with 60° tapered punch.



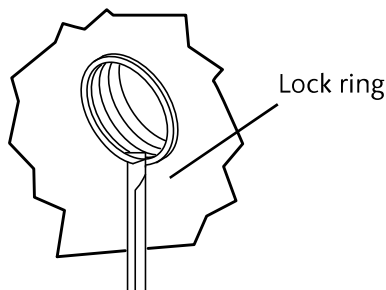
#### **WARNING:**

Be certain gas supply to outlet is shut off before disassembling back body.

### Back Body

Remove internal parts from back body assembly by lifting inside ( 1" ) lock ring from rear housing with small screwdriver, as illustrated below.

Carefully work rubber bushing from back body with screwdriver. Remove check unit and spring. Replace components as necessary and reassemble outlet.



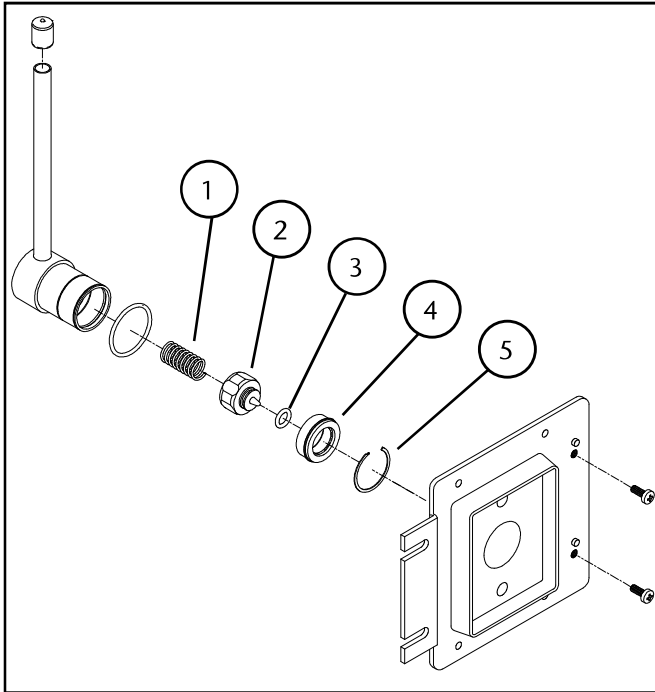
## Troubleshooting Guide

Symptom	Possible Cause	Corrective Action
Quick-Connect or DISS Valve Leaks...		
• without quick-connect adapter in place	<ul style="list-style-type: none"> <li>Faulty primary seal</li> <li>Faulty rubber bushing</li> </ul>	<ul style="list-style-type: none"> <li>Replace primary seal</li> <li>Replace rubber bushing</li> </ul>
• with quick-connect adapter in place	<ul style="list-style-type: none"> <li>Faulty primary seal</li> <li>Faulty rubber bushing</li> <li>Faulty quick-connect stem</li> </ul>	<ul style="list-style-type: none"> <li>Replace primary seal</li> <li>Replace rubber bushing</li> <li>Replace quick-connect stem</li> </ul>
• without DISS nut and nipple in place	<ul style="list-style-type: none"> <li>Faulty primary seal</li> <li>Faulty rubber bushing</li> </ul>	<ul style="list-style-type: none"> <li>Replace primary bushing</li> <li>Replace rubber bushing</li> </ul>
• with DISS nut and nipple in place	<ul style="list-style-type: none"> <li>Faulty DISS nipple</li> <li>Faulty O-Ring seal</li> </ul>	<ul style="list-style-type: none"> <li>Replace DISS nipple</li> <li>Replace O-Ring seal</li> </ul>
Adapter will not engage and/or release	<ul style="list-style-type: none"> <li>Damaged adapter</li> <li>Wrong adapter</li> <li>Damaged frontbody assembly</li> </ul>	<ul style="list-style-type: none"> <li>Replace adapter</li> <li>Check adapter/outlet gas indexing and labels</li> <li>Replace frontbody assembly</li> </ul>
Flow rate does not meet specification	<ul style="list-style-type: none"> <li>Piping system pressure/vacuum incorrectly set</li> <li>Restriction in piping system</li> <li>System demand greater than supply source or system capacity</li> </ul>	<ul style="list-style-type: none"> <li>Reset system pressure/vacuum</li> <li>Check system and/or outlet</li> <li>Check supply source and system sizing</li> </ul>
Outlet pressure or vacuum does not meet specification	<ul style="list-style-type: none"> <li>System pressure/vacuum not set correctly</li> <li>System demand exceeds supply source capability or system capacity</li> <li>Restriction in piping system or outlet</li> </ul>	<ul style="list-style-type: none"> <li>Reset</li> <li>Check supply source and system sizing</li> <li>Check and remove</li> </ul>

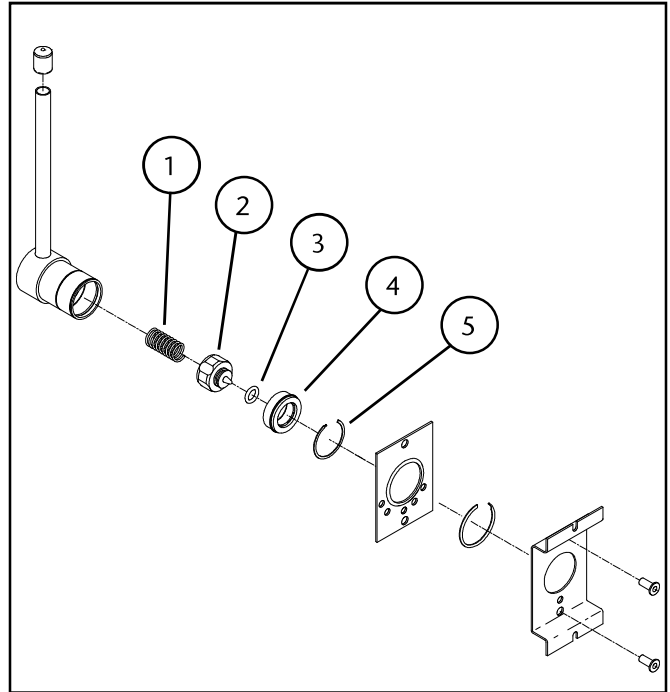


## Replacement Components

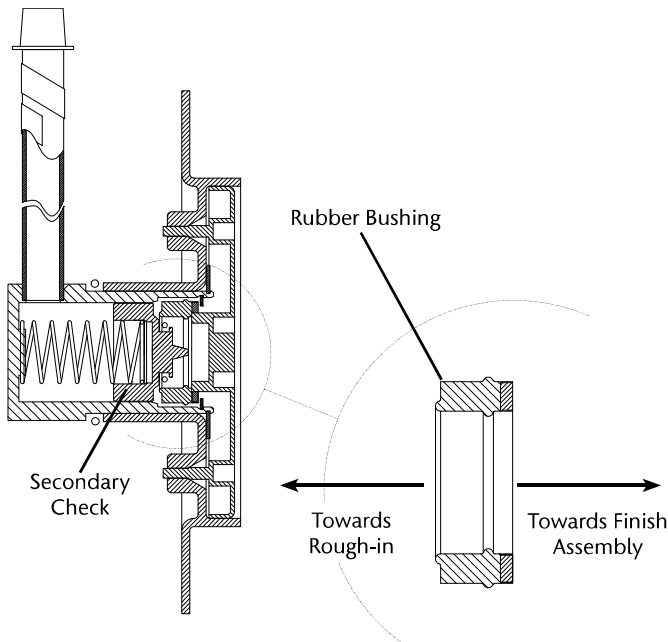
### Gemini and Diamond® III Outlets



Concealed Wall Outlet Back Body



Console Wall Outlet Back Body



#### NOTE:

- Rubber bushing, item 4, must be oriented as shown for proper operation.
- When replacing rubber bushings, item 4, replacement of secondary check, item 2, is also recommended.

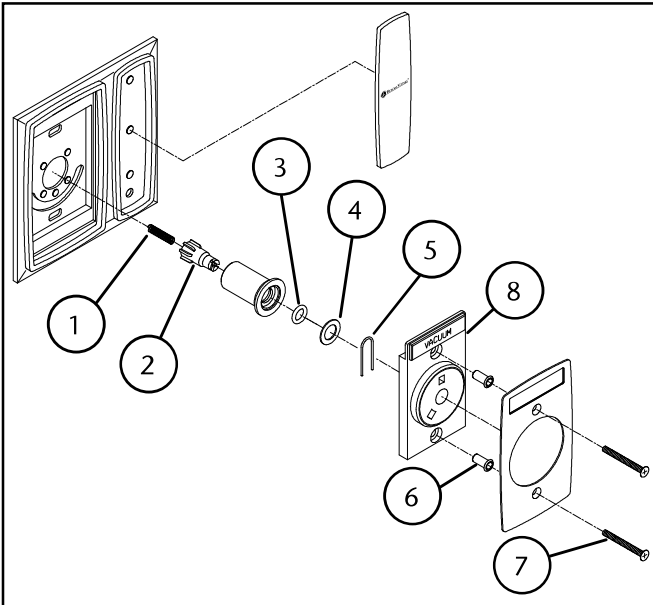
Item	Part Number	Description
1.	4107 2097 29	Spring (Bronze) for pressure gases (pkg of 10)
	4107 2097 30	Spring (SS) for vacuum and WAGD (pkg of 10)
2.	525344-00	Secondary Check (each)
3.	4107 2097 38	O-Ring, Black (pkg of 10)
4.	622601-PG	Rubber Bushing (pkg of 10)
5.	4107 2097 88	Retaining Ring (pkg of 10)

#### Repair Kits: (Below Repair Kits Contain Components to Repair 10 Backbodies)

Part Number	Description
290802-PG	Secondary Check Repair Kit (Pressure Service) Items 1, 3, 4, 5
290803-PG	Secondary Check Repair Kit (Vacuum/WAGD) Items 1, 3, 4, 5

## Replacement Components

### Gemini and Diamond® III Outlets



**Gemini Quick-Connect Concealed Wall Outlet**

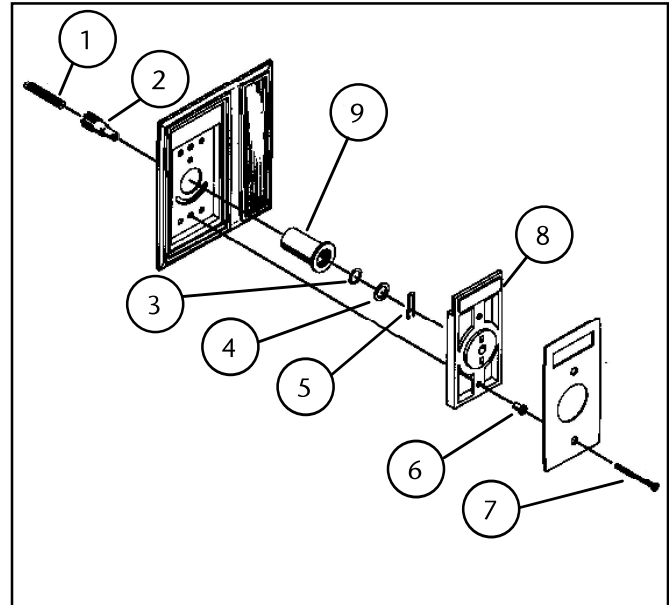
Item	Part Number	Description
1.	833436-PG	Spring (pkg of 10)
2.	4107 2097 44	Piston (pkg of 10)
3.	622589-PG	O-Ring, Red (pkg of 10)
4.	415038-PG	Washer (pkg of 10)
5.	833953-PG	Lock-in Adapter Spring (pkg of 10)
6.	831344-PG	Eyelet (pkg of 50)
7.	4107 4005 21	Screw, 6-32 x 1-1/2"
8.		Keying Disc
	616316-10	Oxygen
	616316-11	Nitrous Oxide
	616316-12	Medical Air
	616316-13	Vacuum
	616316-19	WAGD

#### Repair Kits:

**Gemini:** To repair 10 outlets, order 1 each of 290804-PG and 1 each of 831344-PG, as shown as item 6.

**Diamond III:** To repair 10 outlets, order 1 each of 290804-PG and 1 each of 4107 2097 31, as shown as item 6.

Part Number	Description
290804-PG	Primary Check Repair Kit Items 1, 2, 3, 4, and 5



**Diamond® III Quick-Connect Wall Outlet**

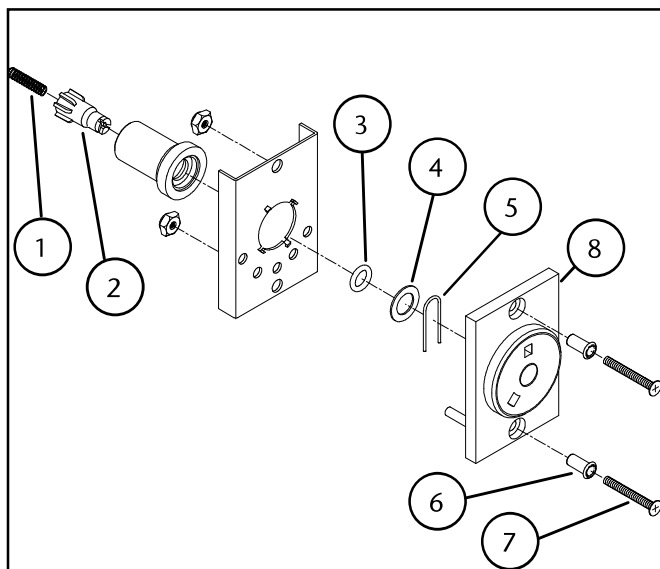
Item	Part Number	Description
1.	833436-PG	Spring (pkg of 10)
2.	4107 2097 44	Piston (pkg of 10)
3.	622589-PG	O-Ring, Red (pkg of 10)
4.	415038-PG	Washer (pkg of 10)
5.	833953-PG	Lock-in Adapter Spring (pkg of 10)
6.	4107 2097 31	Eyelet (pkg of 50)
7.	4107 4005 21	Screw, 6-32 x 1-1/2"
8.		Keying Disc
	4107 4006 08	Oxygen
	4107 4006 09	Nitrous Oxide
	4107 4006 11	Medical Air
	4107 4006 10	Vacuum
	4107 4006 75	WAGD
9.	4107 6520 87	Front Body Cylinder

#### NOTE:

Do not interchange Keying Discs or Front Body Cylinders between Gemini and Diamond® III applications. Repairs may result in leakage.

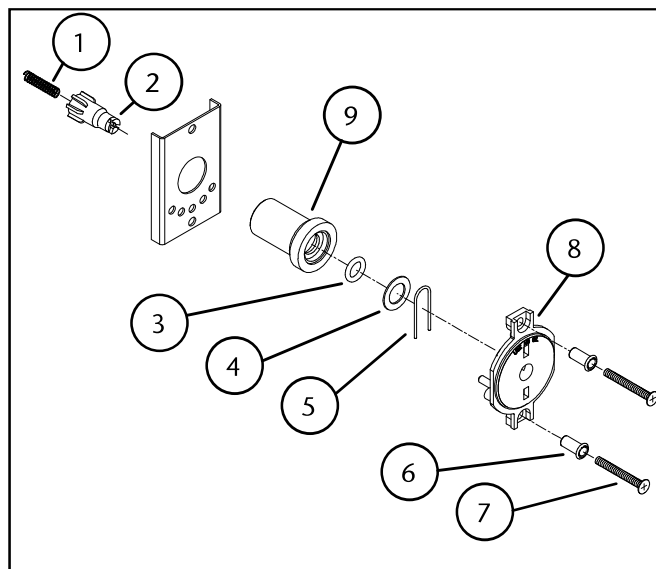
## Replacement Components

### Gemini and Diamond® III Outlets



**Gemini Quick-Connect Console Outlet**

Item	Part Number	Description
1.	833436-PG	Spring (pkg of 10)
2.	4107 2097 44	Piston (pkg of 10)
3.	622589-PG	O-Ring, Red (pkg of 10)
4.	415038-PG	Washer (pkg of 10)
5.	833953-PG	Lock-in Adapter Spring (pkg of 10)
6.	831344-PG	Eyelet (pkg of 50)
7.	4107 4005 21	Screw, 6-32 x 1-1/2"
8.		Keying Disc
	616318-10	Oxygen
	616318-11	Nitrous Oxide
	616318-12	Medical Air
	616318-13	Vacuum
	616318-19	WAGD



**Diamond® III Quick-Connect Console Outlet**

Item	Part Number	Description
1.	833436-PG	Spring (pkg of 10)
2.	4107 2097 44	Piston (pkg of 10)
3.	622589-PG	O-Ring, Red (pkg of 10)
4.	415038-PG	Washer (pkg of 10)
5.	833953-PG	Lock-in Adapter Spring (pkg of 10)
6.	4107 2097 31	Eyelet (pkg of 50)
7.	4107 4005 21	Screw, 6-32 x 1-1/2"
8.		Keying Disc
	4107 6520 74	Oxygen
	4107 6520 73	Nitrous Oxide
	4107 6520 76	Medical Air
	4107 6520 75	Vacuum
9.	4107 6520 87	Front Body Cylinder

#### Repair Kits:

**Gemini:** To repair 10 outlets, order 1 each of 290804-PG and 1 each of 831344-PG, as shown as item 6.

**Diamond III:** To repair 10 outlets, order 1 each of 290804-PG and 1 each of 4107 2097 31, as shown as item 6.

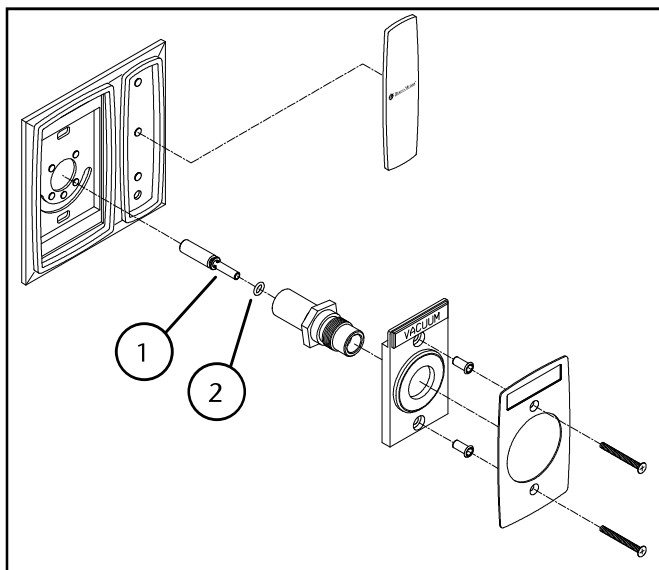
Part Number	Description
290804-PG	Primary Check Repair Kit Items 1, 2, 3, 4, and 5

#### NOTE:

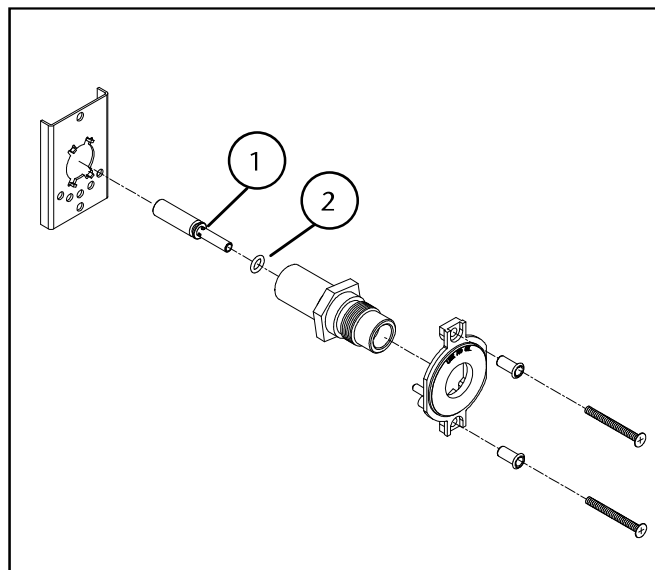
Do not interchange Keying Discs or Front Body Cylinders between Gemini and Diamond® III applications. Repairs may result in leakage.

## Replacement Components

### DISS Outlets



**DISS Concealed Wall Outlet**



**DISS Console Outlet**

Item	Part Number	Description
1.	---	Piston (Not available as separate item. Order appropriate repair kit below.)
2.		O-ring
	622585-PG	For Oxygen, Vacuum, Evacuation and WAGD (pkg of 10)
	622586-PG	For N2O, Air, N2 and CO2 (pkg of 10)

Refer to page 6 for complete replacement assemblies.

**Repair Kits:** (To repair 10 outlets, order 1 repair kit for appropriate gas service.)

Part Number	Description
290805-PG	Primary Check Repair Kit (Oxygen)
290806-PG	Primary Check Repair Kit (N2O, Air, N2 and CO2)
290807-PG	Primary Check Repair Kit (Vacuum and Evacuation)
290808-PG	Primary Check Repair Kit (WAGD)

#### **NOTE:**

Repair Kits are not interchangeable between EVACUATION and WAGD services. Be certain to order correct repair kit.