

Approved per signature page

INTEGRATED RUSSIAN SEGMENT

ACTIVATION/DEACTIVATION

IRS.1

2000

Revision Log

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| 2 | 20 Июн 00 | 3—2 | 20 Июн 00 |
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INTRODUCTION

These Activation/Deactivation crew procedures contain:

- the flight procedures the 2R crew performs with RS onboard systems, subject to activation prior to their nominal operation;
- the flight procedures the 2R crew performs with RS onboard systems, subject to deactivation prior to re-docking Soyuz to another port;
- the flight procedures the 2R crew performs with RS onboard systems, subject to activation after re-docking Soyuz to another port.

These crew procedures are intended for trained crewmembers who have completed the full training course and simulations.

These crew procedures may be updated pending ISS assembly, systems modification and procedure validation at simulators and training facilities.

ACRONYMS AND ABBREVIATIONS

| | | |
|-------|---|---|
| ACK | - | acknowledge |
| COMM | - | communication |
| CWC | - | contingency water container |
| ECLSS | - | Environmental Control and Life Support System |
| IMV | - | Intermodule Ventilation |
| NODE | - | US Module |
| OPS | - | Operations |
| PMA1 | - | Pressurized Adapter |























| | | |
|-------|---|--|
| ABK | - | emergency vacuum valve |
| A3C | - | circuit breaker |
| AK-1M | - | air sampling adsorber |
| AC | - | USOS |
| ACУ | - | RS toilet system |
| БА | - | control unit |
| БВ | - | switch panel |
| БК | - | command output unit |
| БД | - | onboard speaker |
| б/и | - | crew procedures |
| БЛ | - | inhibition |
| БО | - | Soyuz habitation module |
| БОА | - | atmosphere purification unit |
| БП | - | vestibule |
| БПО | - | preliminary desiccant assembly |
| БРК | - | onboard radio complex |
| БРП | - | water distribution and heating unit |
| БРПК | - | condensate separation and pumping unit |
| БТ | - | push-to-talk unit |
| ВАП | - | equipment fan |
| ВВПрК | - | ПрК air duct fan |

| | |
|-------------|---|
| ВВПхО | - ПхО air duct fan |
| ВВ1РО | - [РО] air duct 1 fan |
| ВВ2РО | - [РО] air duct 2 fan |
| ВГЖТ | - gas-liquid heat exchanger fan |
| ВД | - air duct |
| ВК | - personal fan |
| Вкл | - activate, ON |
| ВКЮ | - crew quarters fan |
| ВН1(2) | - electric air heater 1(2) |
| ВН | - vacuum pump |
| ВПО | - instrument module fan |
| ВПрК | - ПрК fan |
| ВПУ | - intercom |
| ВпхО | - ПхО fan |
| ВТ | - heat exchanger fan |
| ВТК | - heat exchanger-condenser fan |
| ВЧ | - HF, high-frequency |
| ВЫКЛ | - power off, unpowered |
| ГА | - pressurized adapter |
| ГЖА | - gas-liquid unit |
| ГНШК | - low-noise headset |
| ДАС | - Emergency Operations (RODF Book) |
| ДДИ | - induction pressure sensor |
| ДнаЗ | - Report to MCC |
| ДСД | - pressure alarm sensor |
| ЕДВ | - water container |
| загл | - cap, plug |
| ЗАКР | - close, closed |
| ЗВБ | - fast-removal screw clamps |
| ЗвН | - continuous sound |
| ЗвП | - intermittent sound |
| ИКР | - Rodnik system status panel |
| ИнПУ | - integrated control panel |
| ИП | - directional air flow sensor |
| ИПД | - Draeger tube air sampler |
| ИРС | - Integrated Russian Segment |
| КАН | - (comm) channel |
| кбл | - cable |
| КВ | - water valve (Rodnik system) |
| КВД | - RS PEV |
| КД | - drainage valve (Rodnik system) |
| Кл | - valve |
| клав | - pushbutton |
| кн | - pushbutton |
| КН | - repressurization valve (Rodnik system) |
| КОНТР | - test (action on control panel), monitor |
| КПВ | - potable water container |
| КРЛ | - command radio link |
| КСД | - pressure release valve |
| КТО | - solid waste container |
| МБС | - intermodule communication |
| МВ | - (absolute) pressure gauge |
| мед | - medical |

| | | |
|-------------|---|--|
| МКС | - | ISS |
| МОК | - | condensate line |
| МП | - | toilet (urine) receptacle |
| МСС | - | DSM; Docking and Stowage Module |
| н/с | - | off-nominal situation |
| НЭП | - | SPP, Science Power Platform |
| НЧ | - | LF, low-frequency |
| ОС | - | (computer) operating system |
| ОСН | - | primary |
| Откл | - | deactivate, Off |
| ОТКР | - | open |
| п | - | section of crew procedures book (corresponds to a procedure) |
| ПА | - | comm panel |
| пан | - | panel |
| ПБК | - | [CA] depress command inhibit |
| ПГО | - | instrumentation cargo compartment |
| перекл | - | switch, sw |
| ПКО | - | dessicant selector valve |
| пл | - | orientation plane |
| поУЗ | - | √ МСС |
| ПП | - | test panel |
| ППС | - | system power panel |
| пр | - | fuse |
| п/рзм | - | connector (one of the two connectors making an entity) |
| ПрК | - | transfer tunnel |
| Пров | - | verify |
| ПрУ | - | dispenser |
| ПСС | - | C&W panel |
| ПУ | - | control panel |
| ПУВН | - | cabin air heaters control panel |
| ПУРВ | - | condensate water processor control panel |
| ПУС | - | Signal-VM control panel |
| ПхО | - | transfer compartment |
| РБС | - | power outlet |
| рез | - | reserve |
| рзм | - | connector |
| рис | - | figure |
| РО | - | working compartment |
| РС | - | RS, Russian Segment |
| РТК | - | communication system |
| СА | - | descent module |
| СБК | - | condensate collector |
| СвД | - | LED |
| СКВ | - | air conditioning system |
| СМ | - | Service Module |
| см. | - | see (for any referenced information) |
| СМВ | - | intermodule ventilation equipment |
| СОА | - | atmospheric purification system |
| СОЖ | - | life support system |
| СОП | - | food supply subsystem |
| СРВ-К | - | condensate water recovery system |
| с/с | - | comm session |
| ССВП | - | docking and internal transfer system |
| СтА | - | docking assembly |

| | | |
|-------|---|-------------------------------|
| СТР | - | active thermal control system |
| СТС | - | FGB audio subsystem |
| СТТС | - | SM audio subsystem |
| СУ | - | docking node |
| ТГК | - | solid oxygen generator |
| ТК | - | Soyuz transport vehicle |
| ТКГ | - | Progress cargo vehicle |
| ТНГ | - | push-to-talk button |
| ТТС | - | audio comm subsystem |
| УКВ | - | VHF |
| УСМ | - | UDM, Universal Docking Module |
| ФВП | - | harmful contaminants filter |
| ФГБ | - | Functional Cargo Block |
| ЦВ | - | circulation fan |
| ЦП | - | central post |
| ЦУП | - | MCC |
| ЦУП-М | - | MCC-M |
| ЦУП-Х | - | MCC-H |
| ЧТВ | - | current time clock |
| шт. | - | quantity (in pcs.) |
| ЩО | - | lighting panel |
| ЭПП | - | electrical food warmer |

CONVENTIONAL SIGNS AND SYMBOLS

| | |
|---|---|
|  | - illuminated |
|  | - not illuminated |
|  | - blinks |
|  | - illumination status changes when command is issued |
|  | - press pushbutton momentarily |
|  | - press pushbutton to lock |
|  | - press pushbutton to release |
|  | - sw → Off (i.e. down relative to label on panel) |
|  | - sw → On (i.e. up relative to label on panel) |
|  | - verify |
|  | - continuously monitor |
|  | - verify aurally |
|  | - adjust by rotating |
|  | - check (in case of discrepancy, attempt a corrective action one time only) |
|  | - place physical device in designated state |
|  | - disconnect |
|  | - connect |
|  | - rotate clockwise |
|  | - rotate counterclockwise |
|  | - rotate clockwise to stop |
|  | - rotate counterclockwise to stop |
| 15:46:28 | - 15 hr 46 min 28 sec |
| deg | - degrees |
| min | - minutes |
| sec | - seconds |
| mL | - milliliters |
| mm Hg | - milimeters of mercury |
| ***** | |
| ***** | - off-nominal situation |
| ***** | |
|  | - repeat steps enclosed by double bracket (cyclic action) |

1. GENERAL INSTRUCTIONS

1.1. CREW RESPONSIBILITIES

While performing operations, the crew is responsible for the following actions:

1. Perform operations per these procedures and **MCC** instructions, in accordance with the crew functional responsibilities and current status of the onboard systems.
2. Monitor systems operations per these crew procedures and **MCC** instructions.
3. Prior to operations, perform indicator checks on the controls to be used.
4. Record the actual time spent on performing the operation.
5. During the next available comm pass, **report to MCC** the completed operations and crew comments regarding systems performance.
6. Upon detection of an off-nominal situation, listed in these crew procedures:
 - perform independent troubleshooting actions recommended in the crew procedures
 - malfunction (deviation) detection time;
 - malfunction (deviation) symptoms;
 - **report to MCC** in the next comm pass.
7. When working with equipment (such as control panels, hoses, cables, etc.) equipped with protective caps and/or covers:
 - remove all caps and covers before operation;
 - reinstall all caps and covers after operation.

1.2. SAFETY PRECAUTIONS

To ensure nominal systems operation and crew safety, the crew is responsible for the following actions:

1. When working with a system, use only the hardware, tools and protective devices, designated by these crew procedures or by **MCC**.
2. Do not allow any cable kinks.
3. Prior to hatch closure, verify there are no foreign objects in the hatchway
4. Upon detection of an off-nominal situation (not documented in these crew procedures), the crew must:
 - stop working with the system;
 - record the time when the off-nominal situation was detected;
 - record the nature of the off-nominal situation;
 - **report to MCC** at earliest available comm pass.

2. ACTIVATION AFTER DOCKING

Soyuz Stow RODF:EMERGENCY OPERATIONS in БО (1 copy)
SM Stow RODF:EMERGENCY OPERATIONS at Central Post (2 copies)

During SM ingress

Use Soyuz comm extension cables until comm using SM subsystem is established

2.1. SM INGRESS

2.1.1. ПРК INGRESS

After opening ПрК-СУ hatch:

1. КВД VALVES CONFIGURATION

Soyuz √ КСД plug → ← fitting labeled МЕСТО ЗАГЛУШКИ КСД
√ КВД БО-СУ → ЭЛЕКТ УПР (*Electric*)
ПрК √ КВД ПрК-ТК → ELECTRIC

2. LIGHTS ACTIVATION

ЩО(ПрК) ADDITIONAL
↓ Л1,2 (two)

3. DOCKING AND INTERNAL TRANSFER SYSTEM (ССВП) CLAMPS INSTALLATION

Perform fast-removal screw clamps installation per 4.2.2.

2.1.2. TRANSFER TO [РО] AND ПХО

ПрК 1. РО-ПрК HATCH OPENING

00:00:00 КВД ПрК-РО → OPEN
00:03:00 Rotate hatch handle in direction of arrow OPEN to stop
Raise hatch until secured in open position

РО КВД ПрК-РО → CLOSED
√ КВД РО-ПрК → ELECTRIC

2. LIGHTS ACTIVATION

NOTE

Auxiliary lights on ЩО-ЛО and ЩО-ШО panels can be activated only when the main lights are already on.

ЩО-ЛО(434) MAIN

⬇ 1,2,3,4 - Л1 (four)

AUX

⬇ 1,2,3,4 - Л2 (four)

ЩО-ШО1(434)

⬇ 1,2-Л1 (two) - main lights

⬇ 1,2-Л2 (two) - auxiliary lights

ЩО-ШО (417)

ЩО-ШО1(417)

⬇ 1,2-Л1 (two) - main lights

⬇ 1,2-Л2 (two) - auxiliary lights

ЩО(417)

ADDITIONAL

⬇ Л1,2 (two)

ЩО(plane II, ПхО) ADDITIONAL

⬇ Л1,2 (two)

NIGHT

⬇ OFF

3. КВД AND КСД STATUS CHECK

[РО]

√ КВД РО-ПхО — ELECTRIC

ПхО

√ КВД ПхО-РО — CLOSED

√ КВД ПхО-СУ(ФГБ) — ELECTRIC

√ КВД ПхО-СУ(НЭП) — CLOSED

√ КВД ПхО-СУ(УСМ) — CLOSED

√ КСД ПхО-СУ — CLOSED

4. AIR SAMPLE COLLECTION IN SM

Soyuz

Obtain from kit:

- ACCURO manual pump
- AK-1M adsorber
- pouch w/ Draeger tube air samplers #19 (#20)

SM ЦП

Air Sample Collection with AK-1M Adsorber

- ⚠ pump round indicator color is white
- ✓ pump cycles counter — 0 (if otherwise, counter may be reset by depressing the rod next to counter window using a felt-tip pen)

Unscrew two strap nuts from AK-1M adsorber tips and remove two caps
AK-1M adsorber → ← ACCURO manual pump

- Fully compress pump to the hard stop (indicator color — dark)
- Pump cycles counter advances by one
- Release pump
- Wait until pump bellow is fully expanded (indicator color — white)
- Repeat cycles until pump cycles counter — 5

AK-1M adsorber ↔ ACCURO manual pump
Install caps (two) onto adsorber tips and secure by tightening strap nuts
Record date, time and location of air sample collection

AK-1M adsorber → container #7 of medical locker (KB-02)
Keep ACCURO manual pump out for further work with indicator-type adsorber tubes

SM ЦП

Air sample collection using indicator-type adsorber tubes

Obtain from pouch w/ Draeger tube air samplers #19 (#20):
- indicator-type adsorber tubes # 140 and #160 (two)

- ⚠ the sensitive layer color on the adsorber tube is white * * * * *

If sensitive layer color on the adsorber tube is not white, DO NOT use this adsorber.

Obtain another adsorber from pouch

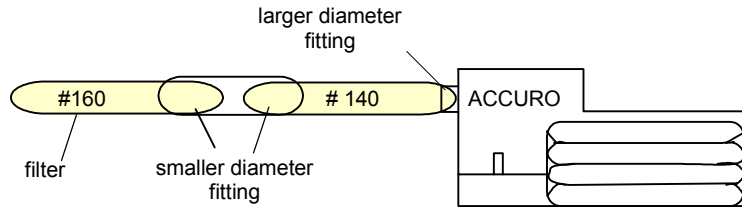
Report to MCC

* * * * *

Snap off both tips of adsorber glass tube (snapping sound is heard)

Assemble the circuit:

Connect together smaller diameter fittings of adsorber tubes
 Adsorber glass tube #140 larger diameter fitting → ← ACCURO pump



Pump

Cycles counter → 0
 ↙ pumps indicator color is white

Fully compress pump to the hard stop (indicator color — dark)
 Pump cycles counter advances by one
 Release pump

Wait until pump bellows is fully expanded ($t \leq 1.5$ min)
 (Indicator color - white)

* * * * *

* *

√ both tips of adsorber glass tube are snapped off

* *

↙ adsorber glass tube #140 sensitive layer color turns from white to green
 Record the length of green color stripe in the sensitive layer (use the adsorber scale)

| | | | | | | | | | | |
|-------------------------------|---|---|---|---|---|---|---|---|---|----|
| Pump Cycles Counter | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Sample adsorber scale reading | | | | | | | | | | |

Repeat until number of measurements — 10

Cycles counter → 0

Report measurement results to MCC

Discard used adsorber tube into trash
 Stow ACCURO manual pump in container #7 of medical locker
 Keep the kit for further air sample collection in FGB

5. CREW PROCEDURE BOOKS STOWAGE

Stow RODF crew procedures set in US stowage bags and temp secure at Central Post

2.2.4. PRESSURE ALARM SENSOR (ДСД) ACTIVATION

ППС-24(338) Ⓞ ДСД (*Pressure Alarm Sensor*)

[PO] ⏪ P[МВ] **Report to MCC-M**

ДСД(228) Ⓞ → СИГНАЛИЗАЦИЯ (*Alarm Annunciation*)
 √ Ⓞ — 420-690

control knob (adjust incrementally) →690
 Possible for 5 minutes:
 ПСС ATM PRESS
 GENERAL ALARM **ЗВУК**
 ⏴ ACK

2.2.5. DIGITAL CLOCK ACTIVATION

(00:15:00)

Clock (ЦП, 434) Ⓞ ON **ЗВУК**
 ПСС ⏴ ACK

Current Time Set

Clock √ Ⓞ — CUR TIME
 √ Ⓞ — SET

0 0 0 0 0 0 (hh:mm:ss)
 0 1 - 1 (date, day)

NOTE
 Current time input resolution is 10 sec.

By repeatedly pressing pb FIELD, select required digit on current time readout

⏴ ADJUST and hold until desired figure appears in the selected digit field
 Release pb ADJUST when desired figure appears in the selected digit field

Repeat steps to input correct current time and calendar data in all digits on digital readout

When current time and date input is complete:
 Ⓞ → RUN

2.2.6. INTEGRATED CONTROL PANEL (ИНПУ) ACTIVATION

| |
|---|
| CAUTION |
| <p>1. Integrated control panel should be activated only when it is required.</p> <p>2. Do not issue a command from both ИНПУ panels simultaneously.</p> |

00:00:00 ИНПУ ↓ POWER ON □ POWER ON
 ↖ ■ LED SCRΝ
 ↖ ■ LED PANEL

Wait while: - operating system boots
 - software self test is performed

≤ 00:00:10 SM: FORMAT STRUCTURE display appears on screen

Wait for message **OPERATIONAL** in SELF TEST RESULTS area * * * *

* * * * *
 ↓ POWER OFF ■ POWER ON
 Report to MCC
 * * * * *

Repeat activation check for second ИНПУ panel, after deactivating first ИНПУ.
 (↓ POWER OFF)

Input correct current time for the activated ИНПУ panel:

SM: FORMAT STRUCTURE
 INPUT TIME **ENTER** □ INPUT TIME

In the middle of display, the current time input field is highlighted

| |
|--|
| <p><u>NOTE</u></p> <p>To cancel erroneous input, ↓ RESET</p> |
|--|

Using cursor, sequentially input ___ hr ___ min ___ sec

↓ ENTER ■ INPUT TIME

CURRENT TIME readout will start counting off the time
 In the middle of display, the current time input field will disappear

Leave ИНПУ in operation to control SM Audio Subsystem [CTTC]

2.3. RS LAPTOP ACTIVATION

Power up RS Laptop power supply

БП Laptop sw
(Laptop power supply)

ИНПУ SM:СУБА, REGUL, СУД CONTROL
LAPTOP-1(2) **ON** LAPTOP-1(2)
RS Laptop left LED (in any color)

Power up RS Laptop

RS Laptop status LED

Operating system boots up

◀ initial boot startup menu:



```
1.          BIGDOS
2.          EXT_DOS
3. Active   SOLARIS
4.          Unused
```

NOTE

If no action is taken within 30 sec, SOLARIS starts loading

Select menu item 3 or press Enter to load SOLARIS

◀ screen message:

'The System is ready'

"... console login:"

Input login **pcs1**

'Password:'

Input password **pcs1**

◀◀ automatic loading sequence until Home Page is displayed

2.3.1. SM AUDIO SUBSYSTEM [CTTC] ACTIVATION

Unstow low-noise headset (ГНШК) for operation:

| | |
|----------|-----------------------------|
| ПрК | - bag on panel 460 |
| [РО]: | |
| cabin | - bag on panels 238, 441 |
| 209, 409 | - recess under ИнПУ panel |
| ПхО | - bag above comm panel (ПА) |

1. [CTTC] SETUP

ИнПУ SM:CONTROL:SM COMM
SM COMM READY INIT **ON** SM COMM READY INIT

ПА (all) ↓ TEST / RESET (hold until the check is complete)
 ↙ LEDs (all)
 ↙ LED FUSE

2. COMM FROM SM

ИнПУ SM:CONTROL:SM COMM
VHF1 **ON** VHF1

To establish comm link from SM:

ПА ↙ LED VHF
 ↓ CHANNEL 2 CHANNEL 2

БТ ↓ PTT and hold to talk
ПА LED XMIT 2

To establish comm link from Soyuz:

SM
ПА 3(228) ↙ LED VHF
 ↓ CHANNEL 2 CHANNEL 2

Soyuz П13 ВКЛ МБС (*Hardline Soyuz/ISS Comm On*)
 Н13 ВКЛ ДУПЛЕКС ВПУ (*Intercom Duplex On*)

3. [CTTC] RETURN TO INITIAL CONFIGURATION (after comm session end)

For comm from Soyuz:

Soyuz П14 ОТКЛ МБС (*Hardline Soyuz/ISS Comm Off*)
 Н14 ОТКЛ ДУПЛЕКС ВПУ (*Intercom Duplex Off*)

SM ПА (all) CHANNEL 2 CHANNEL 2

ИНПУ SM:CONTROL:SM COMM
 VHF1 **OFF** VHF1

For further [CTTC] operation, see RODF:COMMUNICATION SYSTEM

2.3.2. РО-ПРК HATCH FRAME RING INSTALLATION

(00:20:00)

138 Unstow hatch frame ring from mounting brackets and unfold
 Install ring brackets on hatch frame mounting pins
 Insert bottom end of frame ring guide pin into sealing mechanism groove
 Rotate hatch handle in direction of arrow ЗАКРЫТИЕ (*Close*) to the hard stop


2.3.3. AIR DUCT INSTALLATION


[PO] Unsecure flexible duct sections assembly

Assemble air duct as shown in air duct installation diagrams (Figure 2.3.3-1, 2.3.3-2)
 Secure sections along air duct layout route (using Velcro straps)


Rotate ПрК fan (ВПрК) to blow in [PO] direction

LEGEND

 - Flexible air duct section. Lettering on air duct in diagram represents actual labeling. Segments are attached with Velcro.


 - Rigid air duct section. Lettering on air duct in diagram represents actual labeling.


 - Attached by cord

 - Emergency disconnect interface

 - Attached by Velcro

Outlined with red - Emergency disconnect interface location

 - Fan

 - Air flow direction

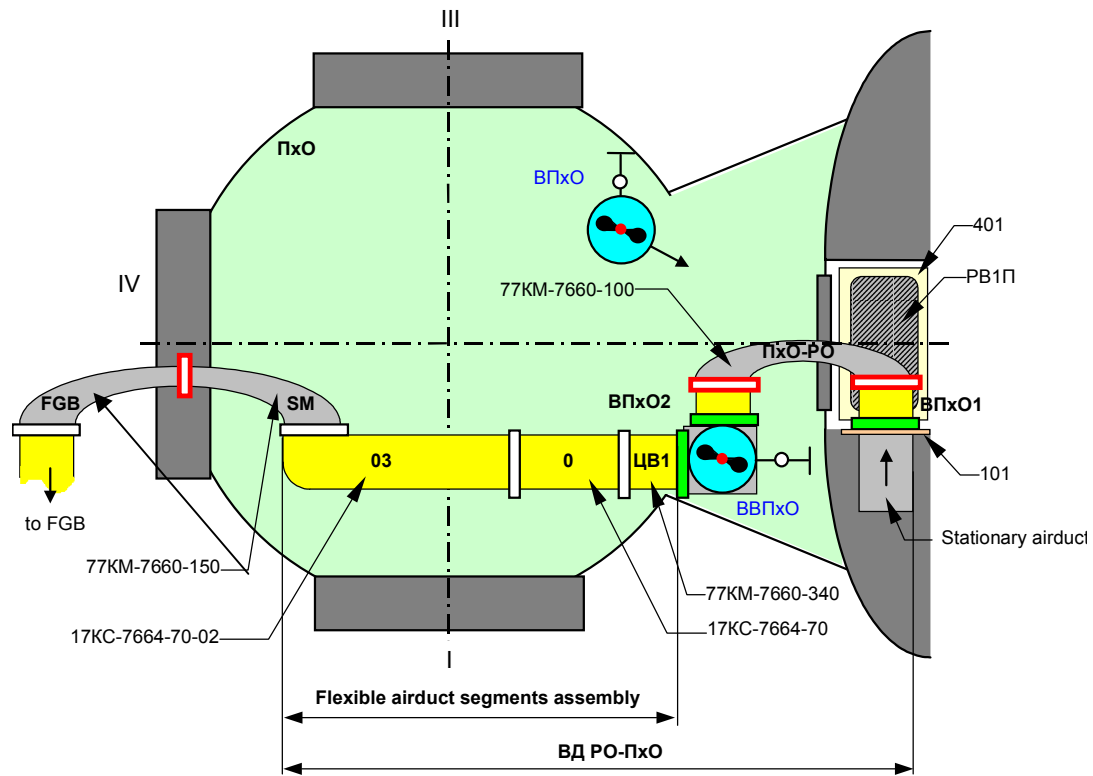


Figure 2.3.3-1. Air duct Installation in PO-ПхО Area

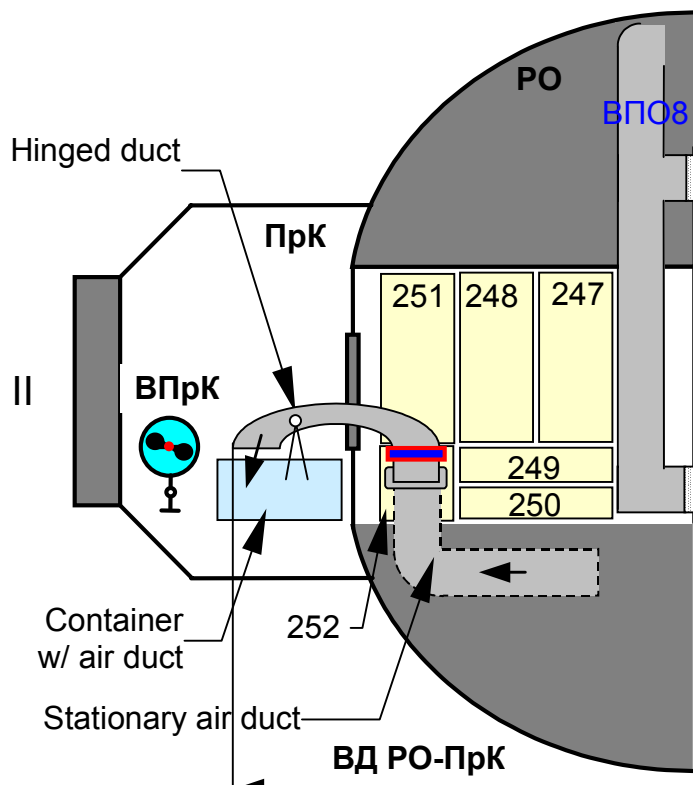


Figure 2.3.3-2. Air duct Installation in PO-ПрК Area

2.3.4. AIR DUCT FANS ACTIVATION

| | |
|-------------|--|
| ППС-21(306) | <ul style="list-style-type: none"> ☞ ВПО4, ВПО6, ВПхО √ ☞ ВПО2, ВТ1, ВТК1, ВАП2 |
| ППС-22(308) | <ul style="list-style-type: none"> ☞ ВПО3, ВВПхО √ ☞ ВПО1, ВПО5, ВТ2, ВТК2, ВАП1 |
| ППС-23(338) | <ul style="list-style-type: none"> ☞ ВПрК, ВПО9, ВПО11 √ ☞ ВПО7, ВГЖТ3, ВВ1РО |
| ППС-24(338) | <ul style="list-style-type: none"> ☞ ВВПрК √ ☞ ВПО8, ВПО10, ВВ2РО, ВГЖТ2 √ ☞ ВГЖТ4, ВГЖТ1, ВСЭП1 √ ☞ ВПО12 |

2.3.5. VOZDUKH SYSTEM ACTIVATION**NOTE**

Vozdukh system activation is performed after the system is completely installed and outfitted

1. REGENERATION

| | |
|----------|---|
| БОВА | <ul style="list-style-type: none"> √ VLV GRP 1, 3 — RE GEN VLV GRP 2 → RE GEN |
| 00:00:00 | <p>Open VAC VLV 1, 2, 3, [ABK COA]: behind 425 ABK-COA1 (<i>Vozdukh Emergency Vacuum Valve 1</i>) → OPEN ПУ СОА ◀ □ VAC V OP</p> <p>БОВА VAC VLV 2 → ОТКР (<i>Open</i>) ПУ СОА ◀ ■ VAC V2 CL 🔊 hissing of the air exiting the system may be heard briefly</p> <p>БОВА VAC VLV 1 → ОТКР (<i>Open</i>) ПУ СОА ◀ ■ VAC V1 CL</p> <p>БОВА VAC VLV 3 → ОТКР (<i>Open</i>) ПУ СОА ◀ ■ VAC V3 CL</p> |

03:00:00 Close VAC VLV 1, 2, 3, [ABK COA]:
 behind 425 ABK-COA1 (Vozdukh Emergency Vacuum Valve 1) → CLOSE
 ПУ COA ◀ ■ VAC V OP

 Б0А VAC VLV 1 → CLOSE
 ПУ COA ◀ □ VAC V1 CL

 Б0А VAC VLV 2 → CLOSE
 ПУ COA ◀ □ VAC V2 CL

 Б0А VAC VLV 3 → CLOSE
 ПУ COA ◀ □ VAC V3 CL

CAUTION

When transferring VLV GRP 1, 2, 3 control switch to position ABSORB across sector CLOSED (right before ABSORB), try to move switch slowly. When hissing of air is heard, halt until the hissing stops, then resume moving switch slowly to its destination

Б0А VLV GRP 1, 2, 3 → ABSORB
 VLV GRP 1, 2, 3 → CLOSED before ABSORB

2. INITIAL STATE CHECK

ПУ COA(425) Control panel is powered off
 √ Ⓢ (all)
 √ sw CYCLE TIME — OFF
 √ sw VAC PUMP CYCLE TIME — 1 MIN
 √ sw AIR FLOW, % FULL — 100
 √ sw ADJUST CYCLE TIME % — 50
 √ sw PP CO2 SETPOINT mmHg — 6

БПО(behind 321) √ SELECTOR VALVE — 1

3. ELECTRICAL CIRCUIT ASSEMBLY CHECKOUT (15 min)

Prepare Vozdukh Test Panel (ПП COA) for operation

- ПП COA
behind 425 √ Ⓢ (all)
connector X1 →|← connector 10Ю=A305-X1 of cable 17KC.10Ю 8210A-1660
connector X2 →|← connector 10Ю=A305-X2 of cable 17KC.10Ю 8210A-1670
- ПУ COA ↓ POWER PANEL ON
 VAC V1 CL
 VAC V2 CL
 VAC V3 CL
 VAC V OP
 SEL VLV MANUAL
- ПП COA <| LED PNL PWR
- ПУ COA ↓ LAMP TEST (and hold until the check is complete)
 <| Indicator lights and LEDs (all)
- ПП COA ↓ H/W MATE CHECK (and hold until the check is complete)
 <| LED H/W MATE CHECK
- ↓ HEATER CIRCUITS (and hold until the check is complete)
 <| HEATER1 C1, C2, C3, C4 (four)
 <| HEATER2 C1, C2, C3, C4 (four)

4. SYSTEM TEST ACTIVATION (20 min)

- ПУ COA Ⓢ POWER 1, 2, 3 (three)
 ↓ SYS INIT SYS INIT
- БОА VLV GRP 2 → CLOSED (position before RE GEN)
 <| VLV GRP 1 — CLOSED (position before ABSORB)
- БОА
ПУ COA VAC VLV 1 → ОТКР (*Open*)
 <| VAC 1 CL
- БОА
ПУ COA VAC VLV 2 → ОТКР (*Open*)
 <| VAC 2 CL
- Behind 425
ПУ COA ABK-COA1 (Vozdukh Emergency Vacuum Valve 1) → OPEN
 <| VAC V OP

- ПУ СОА sw AIR FLOW %, FULL → 60
 ↓ SEL VLV AUTO ON ■ SEL VLV MANUAL
- ⊕ HEATER 1 — C1, C2, C3, C4 (four)
 ⊕ HEATER 2 — C1, C2, C3, C4 (four)
 ⊕ FAN
 ⊕ VACUUM PUMP
 ⊕ VLV GRP 1, VLV GRP 2
- ПП СОА ↓ VAC V INIT
 ПУ СОА ◀ ■ SYS INIT
 БОА ◀ VLV GRP 1 — ABSORB
- 00:00:00 ◀ VLV GRP 2 — RE GEN
 Ⓜ MP5-15Г pump operation
- БПО ◀ SEL VLV — 2
- 00:01:00
 ПП СОА ↓ VAC V INIT
 БОА ◀ VLV GRP 2 — ABSORB
 ◀ VLV GRP 1 — PUMP
 Ⓜ vacuum pump [BH] activation (4 sec delay is possible, operation time ≅1 min)
- БПО ◀ SEL VLV — 1
- 00:00:00 After deactivating vacuum pump [BH]:
 БОА ◀ VLV GRP 1 — RE GEN
- 00:01:00
 ПП СОА ↓ VAC V INIT
 БОА ◀ VLV GRP 2 — ABSORB
 ◀ VLV GRP 1 — PUMP
 Ⓜ vacuum pump [BH] activation (4 sec delay is possible, operation time ≅1 min)
- БПО ◀ SEL VLV — 2
- After deactivating vacuum pump [BH]:
 БОА ◀ VLV GRP 2 — RE GEN
- ПУ СОА ↓ POWER PANEL OFF ■ Indicator lights (all)
 ■ LEDs (all)
- ПП СОА ■ LEDs
 behind 425 connector X1 ↔ connector 10Ю=A305-X1 of cable 17KC.10Ю 8210A-1660
 connector X2 ↔ connector 10Ю=A305-X2 of cable 17KC.10Ю 8210A-1670
- Stow Vozdukh test panel (ПП СОА) in storage location

5. SYSTEM OPERATING MODE ACTIVATION (25 min)

Proceed per RODF: SM LIFE SUPPORT SYSTEM

2.3.6. CO2 ABSORBER OPERATION

Perform absorber activation **on MCC GO** (CO₂ partial pressure becomes ≥ 6.5 mm Hg)

NOTE

1. Use absorbers strictly in ascending order of their numbers
2. Use the absorbers with damaged caps first

1. ABSORBER SETUP

behind 417 cap #6 \leftrightarrow B1(B2) fan inlet
cap #7 \leftrightarrow fan hose
cap #8 \leftrightarrow absorber
absorber \rightarrow fan hose
Remove cap #10 (foil) from absorber cartridge (by pulling the cord along cartridge)
Discard removed caps

2. ABSORBER ACTIVATION

ППС-23 ⚙ ВП1(2)

00:00:00 When P.CO2 (RS Laptop) becomes ≥ 6.5 mmHg, activate second absorber:
Perform step 1 for the second absorber

ППС-23 ⚙ ВП2 (1)

10:00:00 ⚙ ВП1 (2)

On MCC GO When absorber operation is complete:
⚙ ВП1,2

2.3.7. SOLID OXYGEN GENERATOR (ТГК)

ТГК should be activated **on MCC GO** (when O₂ partial pressure becomes ≤ 147 mm Hg)

| |
|--|
| CAUTION |
| ТГК may be activated only if heat-reflecting screen is installed |

Behind panel 134

1. CARTRIDGE SETUP

- Unstow container #6541
- Remove locking seal from container cover
- Remove cover
- Remove lockline and unscrew winged nuts (five)
- Detach cartridge from elastic hold-down
- Remove cartridge, by aligning protrusions on cartridge housing with grooves on support
- Metal cap ←→ cartridge (19 mm wrench) (reinstall metal caps on cartridge after its removal when it becomes spent)

- ⚠ 1. Cartridge is undamaged
 - 2. Integrity of cartridge belt gasket
- *****

- Use another cartridge
Report to MCC

2. CARTRIDGE INSTALLATION INTO SOLID OXYGEN GENERATOR

- Remove heat-reflecting duct
- Remove seal from ТГК clamping mechanism
- Disengage ТГК clamping mechanism

- Remove transport cap from ТГК bowl
- Discard transport cap

- Insert cartridge with piston facing inside housing
- Engage ТГК clamping mechanism
- Secure handle in fixer

- ППС-23 3. ТГК ACTIVATION
 🔑 ТГК1(2)
 🌀 fan operation
 Install heat-reflecting duct

CAUTION

Incineration of cartridge with failed fan is forbidden.

- 00:00:00 Remove seal from ТГК drive handle
 Drive handle on ТГК housing ↻ to click
 ⚡⚡ Cartridge activation (for 3 min)

≥ 02:00:00 4. ТГК DEACTIVATION

- ППС-23 🔑 ТГК1(2)
- Remove heat-reflecting duct
- Remove spent cartridge from ТГК
 ⚡ integrity of cartridge belt gasket
 ⚡ cartridge is fully spent (indicator paint coating is dark)
- Reinstall metal cap (removed earlier) on spent cartridge
 Stow capped cartridge in container #6541
- Install heat-reflecting duct

2.3.8. SM TOILET SYSTEM (АСУ) ACTIVATION

- БВ-1 Switch on lighting in АСУ cabin
 🔑 TOILET
- КТО1 Remove transport fasteners from solid waste container (КТО1) cover
- behind 139 √ fitting А2 of pipeline РУ2 - СМ-У - РУ18 – А2 → ← cap
 ЕДВ-СВ(behind 138) √ fitting ПОДАЧА ДАВЛЕНИЯ (*Pressure Supply*) ↔ cap
 ЕДВ-У(behind 137) fitting ПОДАЧА ДАВЛЕНИЯ (*Pressure Supply*) ↔ cap
- 453,454 Open panels
 behind 454 Handwheel of connectors РУ5(Е-К), РУ4(on Е-К hose),
 connector РУ2(on pretreat and water dispenser (ДкиВ)) → О (*Open*)
 (rotate 90°)
 Panels 453,454 should remain open until filling of air-water separator (МНР-НС),
 pretreat and water dispenser (ДкиВ), Е-К hose

| | | |
|------------|---|---|
| | Activate the system: | |
| ППС-23 | ⬇ TOILET | |
| ПУ АСУ | ⬇ PANEL PWR | |
| | ⬇ PRETRT DOSE → 2 | |
| | ⬇ SHOW STATUS LIGHTS | |
| | ⬅ <input type="checkbox"/> LED UR COLLECT SYS (system is powered) | |
| | ⬇ H/W MATE CK (and hold until check is complete) | |
| | ⬅ <input type="checkbox"/> LED H/W MATE CK | |
| | ⬇ LAMP TEST (and hold until check is complete) | |
| | ⬅ <input type="checkbox"/> all LEDs (except LED UR COLLECT SYS) | |
| ПУ2 | ⬇ → AUTO | |
| | 1. <u>FILLING OF AIR-WATER SEPARATOR (МНР-НС), PRETREAT AND WATER DISPENSER (ДКиВ) AND E-K HOSE</u> | |
| ПУ АСУ | ⬇ MANUAL | |
| | ⬇ DRY SEP OVRD | |
| МП | Remove from attachment point, remove cover | |
| | Stopcock → OPEN | |
| ПУ АСУ | ⬇ SEP ON | <input type="checkbox"/> LED SEP NORMAL |
| | | <input checked="" type="checkbox"/> LED PRETRT (for 5-10 sec) |
| | | <input type="checkbox"/> LED PRETRT pH ↑ |
| МП | Verify there is draft (by hand) | |
| ПУ АСУ | ⬇ PRETRT ON | <input checked="" type="checkbox"/> LED PRETRT (for 5-10 sec) |
| behind 454 | ⬅⬅ pretreat is advancing via hose ПУ4, ПУ5 towards ДКиВ (230 mm during each push of PRETRT ON button) | |
| | Repeat 14 more times with 20 sec interval | |
| 00:00:00 | ПУ АСУ | ⬇ ELECTRIC RESET |
| | | ⬅ <input checked="" type="checkbox"/> LED PRETRT pH ↑ |
| 00:00:30 | МП | Stopcock → Closed |
| | ПУ АСУ | ⬅ <input checked="" type="checkbox"/> LED SEP NORMAL (w/ possible delay ≤ 23 sec) |
| | | Return toilet receptacle (МП) to attachment point, install cover |
| | ПУ АСУ | ⬇ DRY SEP OVRD |
| | | ⬇ MANUAL |
| | | Close panels 453,454 |

2. AUTOMATIC MODE OPERATION CHECK

| | | |
|----------|--------|---|
| 00:00:00 | МП | Remove from attachment point, remove cover |
| | МП | Stopcock → OPEN |
| | ПУ АСУ | ◀ □ LED SEP NORMAL ◀ ■ LED PRETRT (for 5-10 sec) |
| | МП | Verify there is draft (by hand) МП is ready for use |
| 00:00:30 | МП | Stopcock → Closed |
| | ПУ АСУ | ◀ ■ LED SEP NORMAL (w/ possible delay ≤ 23 sec) Return toilet receptacle (МП) to attachment point, install cover |
| | ПУ АСУ | ◀ ■ all LEDs |

Further operation of АСУ per RODF: SM Life Support System

2.3.9. CONDENSATE WATER RECOVERY SYSTEM [CPB-K2M] ACTIVATION

Prepare:

- hose ГОР.ХОЛ-Р3 (in the yellow bag on panel 436)
- adapter hose US/RSA-Б
- behind 230 - hose А-Р (in bag labeled ПРИНАДЛЕЖНОСТИ СИСТЕМЫ РОДНИК)
- RS water container (ЕДВ) (to assemble it, see Step 3)
- ЕДВ fill indicator
- CWC

1. [CPB-K2M] INITIAL STATE CHECK

[COTP] MANUAL VLVS STATUS:

- | | |
|------------|---|
| behind 401 | √ 7Кл2 — ЗАКРЫТ (<i>Closed</i>) |
| | √ 7Кл3 — ЗАКРЫТ (<i>Closed</i>) |
| behind 201 | √ 7Кл1 — ЗАКРЫТ (<i>Closed</i>) |
| | √ 7Кл4 — ЗАКРЫТ (<i>Closed</i>) (shall be closed until [CKB] is installed and [MOK] lines are filled) |
-
- | | |
|------------|---------------------------------|
| behind 433 | STATUS OF MANUAL VALVES : |
| КОЛ1 | √ М3-1 — Open |
| | √ Н3-1 — Open |
| КОЛ2 | √ М3-2 — ЗАКР (<i>Closed</i>) |
| | √ Н3-2 — ЗАКР (<i>Closed</i>) |
| КОЛ3 | √ М3-3 — Open |
| | √ Н3-3 — ЗАКР (<i>Closed</i>) |

БРП-М (behind 433) √ sw — H1
 √ valve HOT — CLOSE
 √ valve WARM — CLOSE
 √ manual valve B3 — TMIN

For operation using Condensate Separation and Pumping Unit 1 (БРПК 1):

БРПК 1 (behind 436) √ РЕЖИМ — РАБ (*Mode — Operation*)
 √ КЛ — 1,3 (*Valve Group — 1,3*)
 √ valve КЛ-1 — Closed

For operation using Condensate Separation and Pumping Unit 2 (БРПК 2):

БРПК 2 (behind 433) √ РЕЖИМ — РАБ
 √ КЛ — 1,3
 behind 436 √ valve КЛ-3 — Closed

ПУРВ-К (432) all indicator lights (panel is powered down)
 √ H2O DISTRIB & HEAT
 √ sw WATER QUANTITY mL — 0

NOTE

Indicator lights SYS PWR, H2O HTR, VLV1 OP, VLV 3 OP shall light up for 1 min according to system's state when pb SHOW STATUS LIGHTS is depressed

2. [CPB-K2M] ACTIVATION

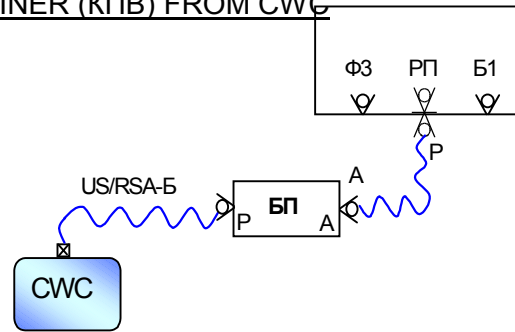
ПУРВ-К √ PANEL POWER ON LED PANEL POWER
 H2O DISTRIB & HEAT
 √ LAMP TEST (hold until check is complete)
 all indicator lights

3. FILLING POTABLE WATER CONTAINER (КПВ) FROM CWC

Prepare for use:

- adapter hose US/RSA-B
- hose A-P
- CWC

Assemble the circuit



00:00:00

БП ⚙ PNL PWR
 ПУРВ-К ⚙ PUMP UNIT
 ⚡ ⚡ □ POT FULL

≤ 00:20:00

БП ⚙
 ИКР ⚙ PUMP UNIT
 ⚙ PNL PWR

Disassemble the circuit

4. ЕДВ ASSEMBLY

Find ЕДВ cover and ЕДВ housing bearing the same part number.
 Place insert on ЕДВ bottom so that the nylon filament knot is inside

⚡ presence of rubber gasket on ЕДВ cover
 Install cover together with folded elastic container on the housing and secure with bolts (six)

Label the assembled ЕДВ — ДЛЯ РЕГЕНЕРАЦИИ (*For Regeneration*)

Remove cap labeled ПОДАЧА ДАВЛЕНИЯ (*Pressure Supply*)
 Install ЕДВ fill indicator

5. DRAIN WATER FROM БРП-М

Required hardware:

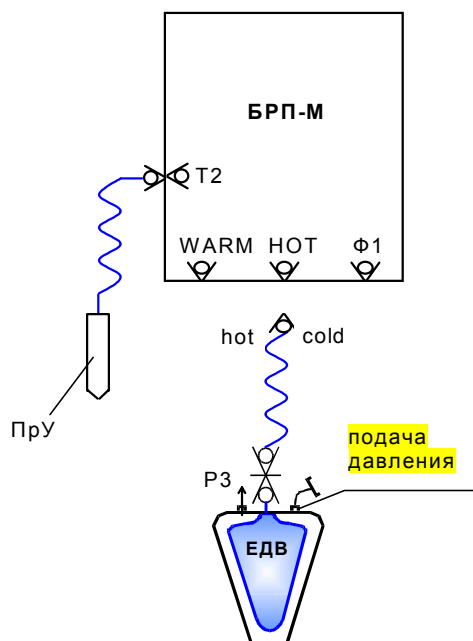
- ЕДВ labeled ДЛЯ РЕГЕНЕРАЦИИ (For Regeneration)
- Hose ГОР.ХОЛ-Р3

Drain water through valve WARM БРП-М (600 ml) :

Assemble the circuit (see Figure)

- БРП-М Hose →|← valve WARM
Valve WARM → OPEN
- ПУРВ-К sw WATER QUANTITY mL →200
- ↓ H2O DSPR PUMP ON
□ DISP RDY
◀ ■ DISP RDY
- Repeat two more times

- БРП-М Valve WARM → CLOSE
Hose ←|→ valve WARM



Draining water through valve HOT on БРП-М (200 ml):

- БРП-М Hose →|← valve HOT
Valve HOT → OPEN
- ПУРВ-К ↓ H2O DSPR PMP ON
- DISP RDY
◀ ■ DISP RDY

6. БРП-М FLUSH WITH HOT WATER**Flushing valve HOT (200 ml):**

| | | | |
|----------|--------|--|---|
| 00:00:00 | ПУРВ-К | ↓ H2O HEATER ON | <input type="checkbox"/> H2O HTR |
| 00:20:00 | | | ◀ <input type="checkbox"/> HOT READY <input checked="" type="checkbox"/> H2O HTR |
| ПУРВ-К | | ↓ H2O DSPR PMP ON | <input type="checkbox"/> DISP RDY ◀ <input checked="" type="checkbox"/> DISP RDY |
| БРП-М | | Valve HOT → CLOSE Hose ←→ valve HOT | |

Flushing valve WARM (200 ml):

| | | | |
|--------|--|---|---|
| | | Hose →← valve WARM | |
| ПУРВ-К | | √ <input type="checkbox"/> HOT READY (to warm up water ↓ H2O HEATER ON) | |
| БРП-М | | Valve WARM → OPEN | |
| ПУРВ-К | | ↓ H2O DSPR PMP ON | <input type="checkbox"/> DISP RDY ◀ <input checked="" type="checkbox"/> DISP RDY |
| БРП-М | | Valve WARM → CLOSE Hose ←→ valve WARM | |

Flushing water connector T2 (200 ml) :

Additionally use hose T2 with dispenser (ПрУ) (the hose being mated to T2 connector on БРП-М)

Hose →|← dispenser of T2 hose

ПУРВ-К √ HOT READY (to warm up water ↓ H2O HEATER ON)

Uncap ПрУ dispenser button of hose T2

ПрУ dispenser button → Press and hold

↓ H2O DSPR PMP ON

DISP RDY

◀ DISP RDY

Release dispenser button

Cap →|← dispenser button

Hose ГОР.ХОЛ-Р3 ↔ dispenser of hose T2

Hose ГОР.ХОЛ-Р3 ↔ ЕДВ and stow

Plug →|← connector P3 of ЕДВ

2.3.10. FOOD SUPPLY SUBSYSTEM (СОП) ACTIVATION

- 245, 246 Prepare container with daily food rations
Remove protective panel from container, by removing screws (two) from hinged locks on both sides of panel (discard fasteners)
Unscrew plastic retainers, securing containers in the rack cells
- Unstow electrical food warmer (ЭПП)
Install ЭПП under bungee cord on panel 436
- 436 connector ≠ 10Ю=A320-X1 of cable 17KC110Ю8210A-7930 →|← РБС-20 (A320)
- 436 РБС-20 (A320)
ЭПП LED POWER

2.4. FGB INGRESS

Soyuz Unstow from docking assembly accessories kit ПРИНАДЛЕЖНОСТИ
СТА 11Ф732.Г1000-540:
- hatch tool 11Ф732.Г1021-0А
- extension 11Ф732.Г1000-560

SM 1. ПХО-СУ (FGB) HATCH OPENING (10 min)

КВД ПХО-СУ (FGB) → OPEN

00:00:00 √ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Fully insert hatch tool into socket HATCH ACTUATOR
Rotate hatch tool in the direction of arrow OPEN until it clicks
(3-4 turns)
√ All rollers appear from under hatch coverplates

Remove hatch tool from socket HATCH ACTUATOR and keep to open
FGB ПГО-СУ (SM) hatch

00:03:00 Remove hatch by pulling it off the guides

cable ≠83Ю = А1-Х56 ←+→ hatch feedthru connector X56
cable ≠83Ю = А1-Х84 ←+→ hatch feedthru connector X84

Install protective cloth shroud 11Ф732.Г9400А1-400 on hatch
(tethered to hatch handle)
Secure hatch in ПХО with its cone directed towards plane II

FGB 2. ПГО-СУ (SM) HATCH OPENING (10 min)

√ Hatch tool → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Using extension 11Ф732.Г1000-560, insert hatch tool into socket HATCH ACTUATOR

00:00:00 Rotate hatch tool in the direction of arrow OPEN until it clicks
(3-4 turns)

00:03:00 Push hatch along the guides to the hard stop
Open and secure hatch in the open position

Stow hatch tool and extension in docking assembly accessories kit
ПРИНАДЛЕЖНОСТИ СТА 11Ф732.Г1000-540
Stow docking assembly accessories kit in nominal stowage location in Soyuz

√ КВД ПГО-СУ (SM) — ELECTRIC
КВД ПХО-СУ (FGB) → ELECTRIC

3. ПГО LIGHTING ACTIVATION

ЩО-ЛО (414,430) ⚡ MAIN - 1,2,3,4-Л1 (four)
 ⚡ AUX 1(2,3,4)-Л2 (crew preference)

4. AIR SAMPLE COLLECTION IN FGB

Obtain from kit:

- ACCURO manual pump
- adsorber AK-1M
- belt pouch with Draeger tube air sampler #19 (#20)

Air sample collection using AK-1M adsorber:
(see 2.1, Step 3)

After air sample collection using AK-1M adsorber is complete:
AK-1M adsorber → in KB-02 of medical locker container # 7
Keep ACCURO manual pump out for further work with indicator-type adsorber tubes

Air quality test using indicator-type adsorber tubes:
(see 2.1, Step 3)

After air quality test using indicator-type adsorber tubes is complete:
Discard used adsorber tube
Stow ACCURO manual pump in medical locker container # 7
Stow the kit in nominal location

On MCC GO 5. ПГО-ГА HATCH OPENING (10 min)

00:00:00 КВД ПГО-ГА → OPEN
00:03:00 Rotate hatch handle in direction of arrow OPEN to the hard stop
 Raise hatch until captured in the open position

√ КВД ГА-ПГО — CLOSED
 КВД ПГО-ГА → ELECTRIC

6. ГА LIGHTING ACTIVATION

ЩО-ЛО(plane IV) ⚡ MAIN 1,2,3,4-Л1 (four)
 ⚡ AUX 1(2,3,4)-Л2 (crew preference)

7. КВД ГА STATUS CHECK

√ КВД ГА-СУ (ТК) — CLOSED
√ КВД ГА-СУ (РМА1) — ELECTRIC

2.5. FGB ACTIVATION**2.5.1. CAUTION AND WARNING PANEL (ПСС) ACTIVATION**

(00:10:00)

ПСС(429)

⏻ POWER

⏪ ■ LED F1

⏻ → TTC

↓ TEST (hold until test is complete)

 Indicator lights (all) General Alarm Light**ЗВУК** (high-pitched warble)

pb TEST → Release

 all indicator lights (w/o alarm signal)

Audio alarm stops

↓ ACK

Report test results to MCC**2.5.2. FGB AUDIO SUBSYSTEM [CTC] ACTIVATION**

(required to establish intermodule communication, perform after SM comm activation)

BCB-95 1,2

↓ LAMP TEST

(hold until test is complete)

⏪ LAMP TEST⏪ REGUL⏪ LIRA⏪ FM⏪ HELIOS⏪ fuse⏪ XMIT 1,2 (two)⏪ MIC 1,2 (two)⏪ CH 1,2 (two)

⏩ LAMP TEST

 LEDs (all)

2. COMM FROM FGB — SETUP

SM ИИПУ SM:SM COMM CONTROL
 √ SM COMM READY INIT

When establishing comm manually:

VHF1 **ON** VHF1

SM ПА 2(407) LED VHF
 ↓ CHANNEL 2 CHANNEL 2

FGB БВК-2(313) ↓ ON ([CTC] is powered from FGB СЭП)
 ВСБ-95 ↓ CHANNEL 2 CHANNEL 2

БТ PTT → Press and hold
 ВСБ-95 LED XMIT 2

3. EMERGENCY ANNUNCIATION PASS-THROUGH CHECK
(while in AOS)

SM ИИПУ SM:CONTROL:SM COMM

On MCC GO SM COMM READY INIT **OFF** ■ SM COMM READY INIT

MCC-M Outputs PAGE-TO-COMM command via КРЛ

SM ИИПУ SM:CONTROL:SM COMM
 √ SM COMM READY INIT

ПСС COMM
 📞 audio alarm is heard from SM (FGB) speakers

↓ ACK ■ COMM
 Mute audio alarm

4. [CTTC] RETURN TO INITIAL CONFIGURATION

| | | |
|------------|--|-------------|
| FGB ВСБ-95 | ✓ CHANNEL 2 | ■ CHANNEL 2 |
| | | ■ LED XMIT |
| БК-2(313) | ↓ OFF ([CTC] is powered from SM СЭП) | |
| SM ПА(all) | ✓ CHANNEL 2 | ■ CHANNEL 2 |
| | When establishing comm in VHF mode manually | |
| SM ИГПУ | <u>SM:CONTROL:SM COMM</u> | |
| | VHF1 OFF | ■ VHF1 |

Perform further [CTTC] operation per RODF: SM COMMUNICATION SYSTEM

2.5.3. ПГО-ГА HATCH FRAME RING INSTALLATION

(00:20:00)

- 402 Remove hatch frame ring from stowage location and unfold
 Attach hatch frame ring brackets to hatch mounting pins
 Secure bottom part of hatch frame ring guide pin in groove of sealing mechanism
 Rotate hatch handle in the direction of arrow CLOSE to the hard stop

2.5.4. ВД1 AND ВД2 AIR DUCTS INSTALLATION**CAUTION**

When working with hinged duct, ensure integrity of Circulation Fan 1 (ЦБ1) electrical cables and connectors.

Remove ВД1, ВД2 sections from stowage location

Assemble ВД1 and ВД2 air ducts as shown in air duct installation diagrams
 (see Figure 2.5.4.-1, 2.5.4.-2)

ВД1 and ВД2 air ducts actual routing sequence is to be determined

Secure ВД1 and ВД2 sections along air duct layout route (using Velcro straps)

Report to MCC

LEGEND

- Flexible air duct section. Lettering on air duct in diagram represents actual labeling. Segments are attached with Velcro.
 - Rigid air duct section. Lettering on air duct in diagram represents actual labeling.
 - Attached by cord
 - Emergency disconnect interface
 - Attached by Velcro
- Outlined in red** – Emergency disconnect interface location
- Fan
 - Air flow direction

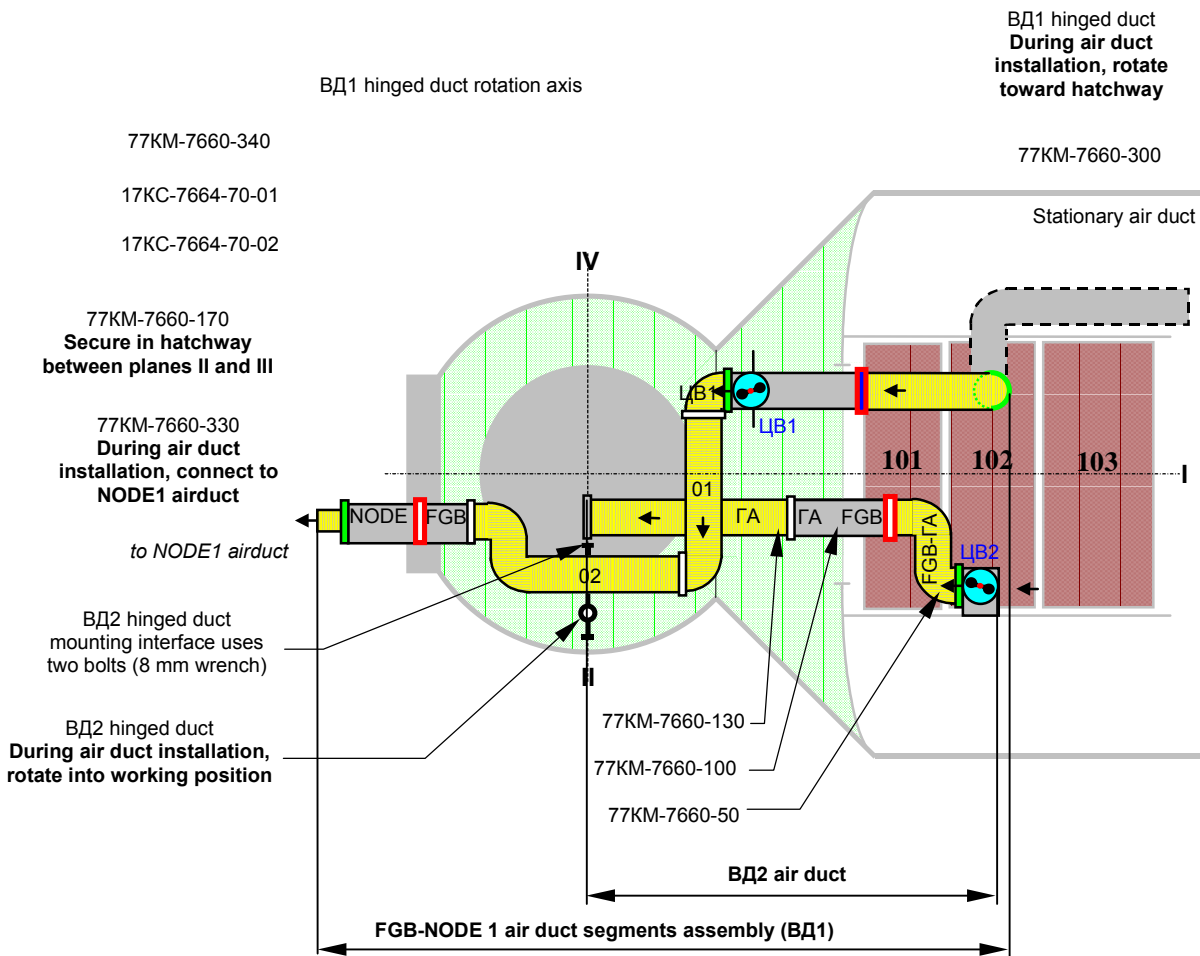


Figure 2.5.4-1. ВД1 and ВД2 Air Duct installation in ПГО-ГА Area

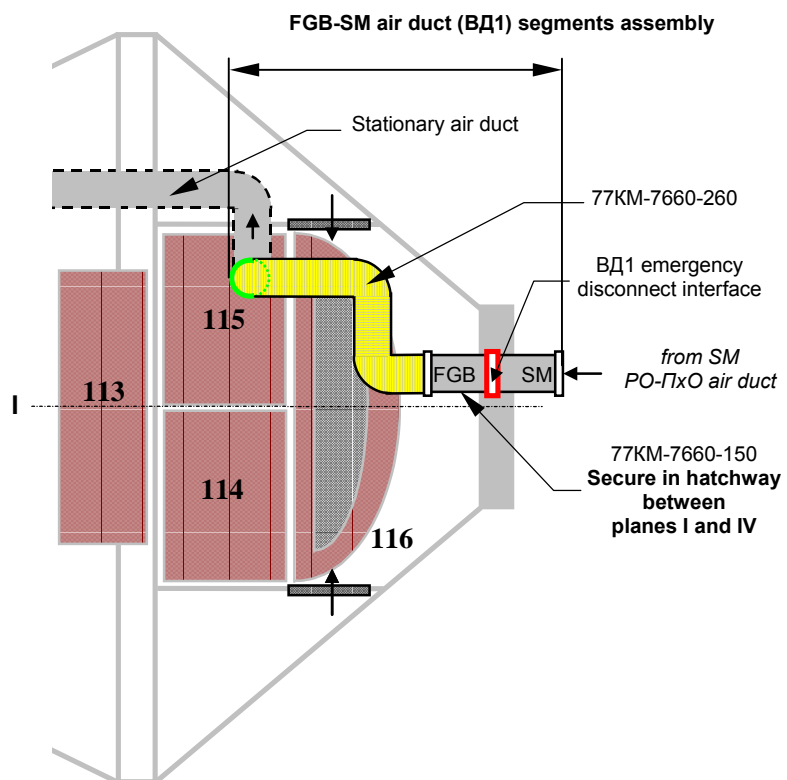


Figure 2.5.4-2 ВД1 Air Duct Installation in ПГО-SM Area

2.6. PMA1 INGRESS

230 Unstow hatch tool 11Ф732.Г1021-0А from docking assembly accessories kit
ПРИНАДЛЕЖНОСТИ СтА (11Ф732.Г4000А1-30)

On MCC GO 1. PRESSURE EQUALIZATION

КВД ГА-СУ (РМА1) → OPEN
(equalization time = 5 min)

On MCC GO 2. OPENING HATCH ГА-СУ [РМА1] (10 min)

√ КВД ГА-СУ (РМА1) — OPEN

Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)

Hatch tool → socket HATCH ACTUATOR to the hard stop

00:00:00 Rotate hatch tool in direction of arrow OPEN until it clicks (3-4 turns)

00:03:00 Open hatch and secure it in the open position
Install protective cloth shroud 33У 9936.021 on the hatch
(tethered to hatch in bag 33У 9936.022)

230 Stow hatch tool into docking assembly accessories kit
Stow docking assembly accessories kit to nominal storage location

√ КВД ГА-СУ (РМА1) — ELECTRIC

3. ROUTE AIR DUCT SEGMENTS FROM ГА INTO PMA1

NODE1 Deactivate Aft, Port IMV fan (see SODF:ISS OPS:ECLSS:NODE1 IMV FAN
DEACTIVATION)

Uncap PMA-1 IMV air duct
Close PMA-1 IMV air duct vent screen

Mate sections of ВД1 air duct with NODE1 air duct (see Figure 2.5.4.-1)

Reactivate Aft, Port IMV fan (see SODF:ISS OPS:ECLSS)

3. DOCKING RECONFIGURATION

3.1. SOYUZ ACTIVATION

Stow returned items into Soyuz

Perform Soyuz activation (per RFDF:SOYUZ:ORBITAL FLIGHT)

3.2. FGB DEACTIVATION

3.2.1. ВД1, ВД2 AIR DUCTS DISASSEMBLY

(On MCC GO after ЦВ1 and ЦВ2 fans deactivation via КРЛ)

| | |
|---------|---|
| NODE1 | Deactivate Aft, Port IMV fan (see in SODF:ISS OPS:ECLSS:NODE1 IMV FAN DEACTIVATION) |
| | Open PMA1 IMV air duct grille Install cap on PMA1 IMV air duct |
| PMA 1 | Flexible air duct segment (77KM-7660-330) ↔ inlet of PMA1 rigid air duct segment |
| ГА, ПГО | Disconnect (partially) and secure segments of ВД1, ВД2 air ducts, so that ГА-СУ(PMA-1) and ГА-СУ(DSM) hatches could be closed (The actual sequence for ВД1, ВД2 air ducts disassembly is to be determined) |

3.2.2. DIRECTIONAL AIR FLOW SENSOR (ИП-1) REMOVAL FROM ГА-СУ(PMA-1) HATCH

Exclude ИП-1 sensor installed on ГА-СУ(PMA-1) hatch from rapid depress monitoring algorithm

RS Laptop ФГБ:СЖО:СОГС
↓  next to icon corresponding to ИП-1 sensor assigned for removal

Remove ИП-1 sensor from hatch and temp secure (tie to frame) nearby

3.2.3. ГА–СУ(РМА-1) HATCH CLOSURE

(00:15:00)

230 Unstow from docking assembly accessories kit ПРИНАДЛЕЖНОСТИ СТА
(11Ф732.Г1021-0А):

- Hatch tool 11Ф732.Г1021-0А
- Wipes

Clean hatch rubber seals using wipes from docking assembly accessories kit
√ No foreign objects in hatch area and in hatchway

Remove protective cloth shroud from hatch
Fold cloth shroud and tether it to the hatch on the ГА side

Unsecure and firmly shut hatch.

√ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Hatch tool → socket HATCH ACTUATOR to the hard stop
Rotate hatch tool in direction of arrow CLOSE until it clicks (3-4 turns)

Stow hatch tool into docking assembly accessories kit
Stow kit in nominal storage location — panel 230

√ КВД ГА–СУ(РМА-1) → ELECTRIC

3.2.4. FGB AUDIO SUBSYSTEM [СТС] DEACTIVATION

БВК-2 √ Ⓞ (Off)

ВСБ-95 1,2 √ pb — Released (all)

3.2.5. CAUTION AND WARNING PANEL (ПСС) DEACTIVATION

ПСС(429) Ⓞ POWER

3.3. SM DEACTIVATION

3.3.1. FOOD SUPPLY SUBSYSTEM (СОП) DEACTIVATION

ЭПП √ ☉ ЭПП

436 ☉ РБС-20 (А320)

ЭПП ◀ ■ LED POWER

3.3.2. THERMAL CONTROL SYSTEM [СОТР] DEACTIVATION

behind 131 √ Condensate collector (СБК) is installed and indicator device is depressed

behind 401 [СОТР] manual valves configuration:
 √ 7Кл2 — ОТКРЫТ (*Open*)
 √ 7Кл3 — ЗАКРЫТ (*Closed*)

behind 201 √ 7Кл4 — В СБОРНИК КОНДЕНСАТА (*To Condensate Collector*)
 √ 7Кл1 — ОТКРЫТ (*Open*)

3.3.3. WATER SUPPLY SYSTEM [СВО] DEACTIVATION

3.3.3.1. RODNIK SYSTEM DEACTIVATION

ИКР √ ☉ PNL PWR

Rodnik panel √ H2O VALVE 1,2 — CLOSED
 √ H2O DRAIN VALVE 1,2 — CLOSED
 √ AIR PRESS VALVE 1,2 — CLOSED

3.3.3.2. CONDENSATE WATER PROCESSOR [CPB-K2] DEACTIVATION

- ПУРВ-К ↓ H2O HEATER OFF
 √ Ⓢ CONTINUOUS HEAT
 √ Ⓢ H2O DISTRIB & HEAT
- √ ■ SYS PWR (to power system down, ↓ CNDS H2O PROC OFF)
- behind 436 √ КЛ-1(3) → ЗАКРЫТЬ (*Closed*)
ПУРВ-К ■ VLV 1(3) OP
- ↓ PANEL POWER OFF

3.3.4. TOILET SYSTEM (АСУ) DEACTIVATION

- ПУ2 Ⓢ AUTO → OFF
ПУ АСУ Ⓢ PANEL PWR
- behind 454:
ДкиВ Handwheel of connector PУ2 → 3 (*Closed*)
Hose E-K Handwheel of connector PУ4 → 3 (*Closed*)
E-K Handwheel of connector PУ5 → 3 (*Closed*)
- [KTO] Close solid waste container [KTO] cover:
 Unscrew two winged nuts
 Remove toilet receptacle from [KTO]
 Close [KTO] cover
 Thread winged nuts
 Secure toilet receptacle in place

3.3.5. VENTILATION SYSTEM [CB] DEACTIVATION**3.3.5.1. FANS DEACTIVATION****1. FAN STATUS CHECK AND DEACT USING SYSTEM POWER PANEL (ППС)**

| | |
|--------|--|
| ППС-21 | <ul style="list-style-type: none"> ⊕ ВПО4, ВПО6, ВПхО √ ⊕ ВПО2, ВТ1, ВТК1, ВАП2 |
| ППС-22 | <ul style="list-style-type: none"> ⊕ ВПО3, ВВПхО √ ⊕ ВПО1, ВПО5, ВТ2, ВТК2, ВАП1 |
| ППС-23 | <ul style="list-style-type: none"> ⊕ ВПрК, ВПО9, ВПО11 √ ⊕ ВПО7, ВГЖТ3, ВВ1РО |
| ППС-24 | <ul style="list-style-type: none"> ⊕ ВВПрК, ВПО12 √ ⊕ ВПО8, ВПО10, ВВ2РО, ВГЖТ2, ВГЖТ4, ВГЖТ1, ВСЭП1 |

2. ВКЮ1 (ВКЮ2) FAN DEACTIVATION

√ ВКЮ1,2 — Off

To power off:

БВК-2(237,440) ↓ OFF

3. ВН1 (ВН2) AIR HEATER DEACTIVATION

219, 305 √ ВН 1,2 — Off (no air flow, no noise from ВН1, 2)

To power off:

ПУВН(237, 440) √ LED Д1
 ↓ ZONE HEATERS OFF ■ ZONE 1, 2, 3
 ↓ FAN OFF

219, 305 Ⓡ neither air flow, nor noise from ВН1, 2 air heaters

ПУВН ↓ PANEL PWR OFF ■ LED Д1

4. ВК1 (ВК2, ВК3, ВК4) FAN DEACTIVATION

√ ВК1,2,3,4 — Off

To power off:

ВК1 (2,3,4) √ ⊕ (on the fan housing)
 РСБ10/3 √ ⊕

3.3.6. SOYUZ AIR DUCT DISASSEMBLY

[PO] Unsecure air duct flexible segments assembly

Assemble air duct per air duct layout diagram (see Figure 2.3.3-1, 2.3.3-2)
(route air duct in ПхО along plane IV behind hatch ПхО-СУ)

Secure air duct segments along installation route (using Velcro)

Rotate ВПРК fan so that its air flow would be directed towards [PO]

Perform Soyuz air duct deinstallation per RFDF: ORBITAL FLIGHT

Redocking from SM port to FGB port

Stow deinstalled Soyuz air duct in ПРК

Rotate ВПРК fan so that it would not interfere with ПРК-СУ hatch closure

Redocking from FGB port to SM port

Stow deinstalled Soyuz air duct in ГА

3.3.7. SM AUDIO SYBSYTEM [CTTC] DEACTIVATION

ИНПУ SM:CONTROL:SM COMM
√ SM COMM READY INIT

or
RS Laptop SM:C&T:STTS
√ SM COMM READY INIT

ПА (all) √ comm panel √ (all)

3.3.8. SIGNAL SYSTEM DEACTIVATION

ПУС √ PNL PWR
√ DETECTOR POWER 1---10 (ten)
√ sw DETECTOR TEST — OFF

3.4. DIRECTIONAL AIR FLOW SENSOR (ИП-1) REMOVAL

ИП-1 sensor, located on the docking port to which Soyuz is docked, needs to be excluded from depressurization monitoring algorithm


RS Laptop

CM:СЖО:СОГС

- for ПрК-СУ hatch

ФГБ:СЖО:СОГС

- for ГА-СУ hatch

↓  next to icon corresponding to ИП-1 sensor assigned for removal

Remove ИП-1 sensor from hatch and tie to frame nearby

3.4.1. PRESSURE ALARM SENSOR (ДСД) DEACTIVATION

ДСД

 → ВЫКЛ (Off)

3.4.2. CAUTION AND WARNING PANEL (ЦП) DEACTIVATION

(00:05:00)

ЦП

 POWER

3.4.3. DIGITAL CLOCK DEACTIVATION

(00:05:00)

Digital clock

 ON

3.4.4. CONTROL SYSTEM DEACTIVATION

Power down RS Laptop (proceed per RODF: SM MANUAL CONTROLS)

Power off RS laptop power supply unit

ИнПУ

SM:СУБА, REGUL, СУД CONTROL

LAPTOP-1(2)

OFF

■ LAPTOP-1(2)

RS Laptop

■ left LED (in any color)

Deactivate ИнПУ panel

ИнПУ

↓ POWER OFF

■ SCRΝ

■ POWER ON

3.4.5. SYSTEM POWER PANEL (ППС) DEACTIVATION

| | |
|--------|---|
| ППС-21 | √ <input checked="" type="checkbox"/> INT CTRL PNL 1 <input checked="" type="checkbox"/> ЧАСЫ (<i>Clock</i>) |
| ППС-22 | <input checked="" type="checkbox"/> C&W PWR 1 <input checked="" type="checkbox"/> C&W PWR 2 √ <input checked="" type="checkbox"/> ДДИ-1 (<i>dP/dT Sensor</i>) √ <input checked="" type="checkbox"/> INT CTRL PNL |
| ППС-23 | √ <input checked="" type="checkbox"/> МАТРИЦА ИНПУ КАН А, КАН Б, КАН В (<i>ИнПУ Channel[A], [B], [B]</i>) <input checked="" type="checkbox"/> ЧАСЫ (<i>Clock</i>) |
| ППС-24 | <input checked="" type="checkbox"/> ДСД (<i>Pressure Alarm Sensor</i>) |

3.5. PREPARATION FOR SOYUZ INGRESS PRIOR TO REDOCKING

Soyuz Unstow from docking assembly accessories kit
 ПРИНАДЛЕЖНОСТИ СтА (11Ф732.Г1000-540):
 - Hatch tool 11Ф732.Г1021-0А
 - Extension tool 11Ф732.Г1000-560
 - Wipes

1. КВД AND КСД VALVE STATUS CHECK

SM √ КВД ПхО-СУ (FGB) — ELECTRIC
 √ КВД ПхО-СУ (UDM) — CLOSED
 √ КВД ПхО-СУ (SPP) — CLOSED
 √ КСД — CLOSED

FGB √ КВД ГА-СУ (PMA-1) — ELECTRIC
 √ КВД ПГО-СУ (SM) — ELECTRIC

Redocking to FGB port:

FGB КВД ГА-СУ(DSM) → ELECTRIC
 ПрК √ КВД ПрК-ТК — ELECTRIC

Redocking to SM port:

FGB √ КВД ГА-СУ(DSM) — ELECTRIC
 ПрК КВД ПрК-ТК → ELECTRIC

FGB, SM 3. DEACTIVATE LIGHTING

4. INGRESS SOYUZ (see RODF: ORBITAL FLIGHT)

Soyuz КСД plug ↔ fitting МЕСТО ЗАГЛУШКИ КСД

3.8. FGB ACTIVATION

3.8.1. CAUTION AND WARNING PANEL (ПСС) ACTIVATION

(00:10:00)

ПСС (429)

Ⓢ POWER
◀ ■ LED F1
Ⓢ → TTS

↓ TEST (hold until test is complete)

□ indicator lights (all)
■ General Alarm Light
ЗВУК (high-pitched warble)

pb TEST → Release

■ All indicator lights w/o alarm signal input
Audio alarm is muted

↓ ACK

Report test results to MCC

3.8.2. ВД1 AND ВД2 AIR DUCTS INSTALLATION

Assemble ВД1 and ВД2 air ducts per ВД1 and ВД2 air duct layout diagram
(see Figure 2.4.4.-1)

ВД1 and ВД2 air ducts actual routing sequence is to be determined

ГА Secure ВД1 air duct segments along layout route (using Velcro straps)

NODE1 Install ВД1 air duct segments from ГА into PMA1
Deactivate Aft, Port IMV fan (see SODF:ISS OPS:ECLSS:NODE1 IMV
FAN DEACTIVATION)

Uncap PMA1 IMV air duct
Close PMA1 IMV air duct vent grille

Mate sections of ВД1 air duct with NODE1 air duct (see Figure 2.4.4.-1)

Reactivate Aft, Port IMV fan (see SODF:ISS OPS:ECLSS)

Report to MCC

3.9. SM ACTIVATION

3.9.1. POWER DISTRIBUTION PANEL (ППС) ACTIVATION

| | |
|--------|---|
| ППС-21 | √ <input checked="" type="checkbox"/> INT CTRL PNL 1 <input checked="" type="checkbox"/> ЧАСЫ (<i>Clock</i>) |
| ППС-22 | <input checked="" type="checkbox"/> C&W PWR 1 <input checked="" type="checkbox"/> C&W PWR 2 √ <input checked="" type="checkbox"/> ДДИ-1 (<i>dP/dT Sensor</i>) √ <input checked="" type="checkbox"/> INT CTRL PNL |
| ППС-23 | √ <input checked="" type="checkbox"/> МАТРИЦА ИНПУ КАН А, КАН Б, КАН В (<i>ИнПУ Channel[A], [B], [B]</i>) <input checked="" type="checkbox"/> ЧАСЫ (<i>Clock</i>) |
| ППС-24 | <input checked="" type="checkbox"/> ДСД (<i>Pressure Alarm Sensor</i>) |

3.9.2. CAUTION AND WARNING PANEL (ПСС) ACTIVATION

(00:10:00)

| | | |
|----------|--|---|
| ПСС (ЦП) | <input checked="" type="checkbox"/> POWER <input checked="" type="checkbox"/> LED F1 <input checked="" type="checkbox"/> → TTS | |
| | ↓ TEST (hold until test is complete) | <input type="checkbox"/> indicator lights (all) <input checked="" type="checkbox"/> General Alarm Light ЗВУК (high-pitched warble) |
| | pb TEST → Release | <input checked="" type="checkbox"/> All indicator lights w/o alarm signal input Audio alarm is muted |
| | ↓ ACK | |
| | Report test results to MCC | |

3.9.3. PRESSURE ALARM SENSOR (ДСД) ACTIVATION

[PO] ↙ P[MB] **Report to MCC-M**

ДСД(228) ⚙ → СИГНАЛИЗАЦИЯ (Alarm Annunciation)

 √ ⚙ — 420-690

 control knob (adjust incrementally) →690

 Possible for 5 minutes:

 ПСС ATM PRESS

GENERAL ALARM **ЗВУК**

 ↓ ACK

3.9.4. DIGITAL CLOCK ACTIVATION

(00:15:00)

Clock ⚙ ON

 √ ⚙ CUR TIME

 ⚙ SET

 Set correct time and date

 ⚙ RUN

3.9.5. SM AUDIO SUBSYSTEM [CTTC] ACTIVATION

Conduct nominal operations per RODF: SM COMMUNICATION SYSTEM

3.9.6. AIR DUCT INSTALLATION

ГА(ПрК) Unsecure air duct flexible segments assembly

 Perform Soyuz air duct installation per RFDF: ORBITAL FLIGHT

 √ ВПрК fan air flow is directed towards [PO]

3.9.7. AIR DUCT FANS ACTIVATION

| | |
|--------|---|
| ПрК | Rotate ВПрК fan so that its air flow would be directed towards [РО] |
| ППС-21 | <ul style="list-style-type: none"> ☞ ВПО4, ВПО6, ВПхО √ ☞ ВПО2, ВТ1, ВТК1, ВАП2 |
| ППС-22 | <ul style="list-style-type: none"> ☞ ВПО3, ВВПхО √ ☞ ВПО1, ВПО5, ВТ2, ВТК2, ВАП1 |
| ППС-23 | <ul style="list-style-type: none"> ☞ ВПрК, ВПО9, ВПО11 √ ☞ ВПО7, ВГЖТ3, ВВ1РО |
| ППС-24 | <ul style="list-style-type: none"> ☞ ВВПрК √ ☞ ВПО8, ВПО10, ВВ2РО, ВГЖТ2, ВГЖТ4, ВГЖТ1, ВСЭП1 |

3.9.8. CONTROL SYSTEM ACTIVATION

Power up and boot RS Laptop (see RODF: MANUAL CONTROLS)
 Power up Integrated Control Panel (ИИПУ) (see RODF: MANUAL CONTROLS)

3.9.9. DIRECTIONAL AIR FLOW SENSOR (ИП-1) INSTALLATION



For the docking port to which Soyuz is currently docked:

- untie ИП-1 sensor from frame and install it on the hatch

- connect ИП-1 sensor to depressurization monitoring algorithm

RS Laptop СМ:СЖО:СОГС - for ПрК-СУ hatch

ФГБ:СЖО:СОГС - for ГА-СУ hatch

↓  next to this ИП-1 sensor icon 

3.9.10. TOILET SYSTEM (АСУ) ACTIVATION

[КТО] Open solid waste container [КТО] cover:
 Open [КТО] cover
 Unscrew two winged nuts
 Install toilet receptacle into place, by tightening winged nuts

Knobs of PУ2, PУ4, PУ5 connectors → O (*Open*)

PУ2 ☞ → AUTO
 PУ АСУ ☞ PANEL PWR

3.9.11. [COTP] SYSTEM ACTIVATION

- √ 7Кл 1,2 — ОТКРЫТ (*Open*)
- 7Кл 3 → В СРВ-К2 (*To Water Condensate Recovery System*)
- 7Кл 4 → ЗАКРЫТ (*Closed*)

3.9.12. WATER PROCESSOR [СРВ-К2М] ACTIVATION

Perform nominal system activation per RODF:LIFE SUPPORT SYSTEM

3.9.13. FOOD SUPPLY SUBSYSTEM (СОП) ACTIVATION

436 Ⓢ РБС-20 (А320)
ЭПП □ LED POWER

4. OPERATIONS AFTER DOCKING WITH PROGRESS

4.1. PROGRESS ON FGB LATERAL PORT

4.1.1. HATCHES OPENING

FGB 230 Unstow from docking assembly accessories kit ПРИНАДЛЕЖНОСТИ СтА
(11Ф732.Г4000А1-30):

- Hatch tool 11Ф732.Г1021-0А
- Extension tool 11Ф732.Г4022-0
- КСД plug

behind 407 Prepare pressure gauge [МВ]

On MCC GO 1. ГА-PROGRESS INTERFACE LEAK CHECK (40 min)

√ КВД ГА-СУ (DSM) — ЗАКРЫТО (*Closed*)
√ ККТ — ЗАКР (*Closed*)

Pressure gauge [МВ] leak check:

Plug ЗГ19 ↔ ККТ
[МВ] →← ККТ

00:00:00 ККТ → ОТКР (*Open*)
00:01:00 ККТ → ЗАКР (*Closed*)
↖↖ ΔP[МВ] ≤ 3 mmHg over 1 min

Vestibule (БП) leak check:

00:00:00 КВД ГА-СУ (DSM) → ОТКРЫТО (*Open*)
00:00:30 КВД ГА-СУ (DSM) → ЗАКРЫТО (*Closed*)

ККТ → ОТКР (*Open*)
↖↖ ΔP[МВ] ≤ 3 mmHg every 5 min over 30 min period
ККТ → ЗАКР (*Closed*)

КВД ГА-СУ (DSM) → ОТКРЫТО (*Open*)
Repressurize vestibule until P.БП[МВ]=P.ГА[МВ]
КВД ГА-СУ (DSM) → ЗАКРЫТО (*Closed*)

[МВ] ↔ ККТ
Plug ЗГ19 →← ККТ

407 Stow pressure gauge [МВ] in nominal storage location

2. ГА-PROGRESS STACK VOLUME PRESSURE EQUALIZATION**NOTE**

КВД ТКГ-СУ is opened via КРЛ.

on MCC GOКВД ГА-СУ (DSM) → ОТКРЫТО (Open)
(pressure equalization time = TBD)**3. OPENING ГА-СУ (DSM) HATCH (10 min)**√ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Insert hatch tool into socket HATCH ACTUATOR to the hard stop00:00:00 Rotate hatch tool in direction of arrow OPEN until it clicks (6-7 turns)
√ all rollers appear from behind hatchplatesRemove hatch tool from hatch socket
Keep hatch tool 11Ф732.Г1021-0А to open ТКГ-СУ hatch later on

00:03:00 Open hatch and secure it in the open position

КВД ГА-СУ (DSM) → ELECTRIC

4. OPENING ТКГ-СУ HATCH (10 min)√ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Insert extension tool into socket ГЕРМЕТИЗАЦИЯ КРЫШКИ to the hard stop
Insert hatch tool into extension tool socket to the hard stop00:00:00 Rotate hatch tool in direction of arrow OPEN until it clicks (6-7 turns)
Remove hatch tool from hatch socket

00:03:00 Open and secure hatch in the open position


КСД plug → fitting labeled МЕСТО ЗАГЛУШКИ КСД

Stow hatch and extension tools into docking assembly accessories kit
ПРИНАДЛЕЖНОСТИ СТА (11Ф732.Г4000А1-30)

FGB 230 Stow docking assembly accessories kit in nominal storage location

4.1.2. PROGRESS DEACTIVATION

ЩО-ЛО Activate lighting

ПБК  → ВКЛ БЛ РРСТ (*Undocking Inhibit On*)

Manual valve ГЖА БО → ГЖА ОТКЛ (*Gas-Liquid Unit Off*)

4.1.3. AIR DUCT INSTALLATION

ГА Remove Progress-FGB air duct segment assemblies from storage locations


Assemble air duct per air duct installation diagram
Secure air duct segments along layout route (using Velcro)

4.1.4. DIRECTIONAL AIR FLOW SENSOR (ИП-1) INSTALLATION

Install ИП-1 sensor on ГА-СУ hatch

RS Laptop Connect ИП-1 sensor to depressurization monitoring algorithm

ФГБ:СЖО:СОГС

↓  next to ИП-1 sensor icon



4.2. PROGRESS ON SM AXIAL PORT

4.2.1. HATCHES OPENING

- ПрК Obtain from docking assembly accessories kit ПРИНАДЛЕЖНОСТИ СтА
(11Ф732.Г4000А1-30):
- Hatch tool 11Ф732.Г1021-0А
 - Extension tool 11Ф732.Г4022-0
 - КСД plug
- 449 Prepare pressure gauge [MB]

CAUTION

Docking interface leak check, hatch opening and docking interface screw clamps (ССВП) installation are performed when ISS is in Free Drift Mode .

Transition to Free Drift Mode is performed **on MCC GO**.

On MCC GO 1. ПрК-ТКГ INTERFACE LEAK CHECK (40 min)

- √ КВД ПрК-ТК — ЗАКРЫТО (*Closed*)
- √ ККТ — ЗАКР (*Closed*)

Pressure Gauge [MB] Leak Check:

Plug ЗГ19 ←→ ККТ
[MB] →← ККТ

- 00:00:00 ККТ → ОТКР (*Open*)
00:01:00 ККТ → ЗАКР (*Closed*)
 << ΔP[MB] ≤ 30 mmHg over 1 min

Vestibule (БП) Leak Check:

- 00:00:00 КВД ПрК-ТК → ОТКРЫТО (*Open*)
00:00:30 КВД ПрК-ТК → ЗАКРЫТО (*Closed*)

- 00:00:00 ККТ → ОТКР (*Open*)
 << ΔP[MB] ≤ 3 mmHg every 5 min

- 00:30:00 ККТ → ЗАКР (*Closed*)

КВД ПрК-ТК → ОТКРЫТО (*Open*)
Repressurize vestibule (БП) until P.БП[MB] = P.РО[MB]
КВД ПрК-ТК → ЗАКРЫТО (*Closed*)

[MB] ←→ ККТ
Plug ЗГ19 →← ККТ

Stow [MB] in nominal storage location

2. ПрК-СУ VOLUME PRESSURE EQUALIZATIONNOTE

КВД ТКГ-СУ vavle is opened via КРЛ.

On MCC GO КВД ПрК-СУ → ОТКРЫТО (*Open*)
(pressure equalization time = TBD)

3. OPENING ПрК-СУ HATCH (10 min)

√ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Insert hatch tool into socket HATCH ACTUATOR to the hard stop

00:00:00 Rotate hatch tool in direction of arrow OPEN until it clicks (6-7 turns)
√ All rollers appear from behind hatchplates

Remove hatch tool from hatch socket
Keep hatch tool 11Ф732.Г1021-0А available to open ТКГ-СУ hatch later on

00:03:00 Open hatch and secure it in the open position

КВД ПрК-СУ → ELECTRIC

4. OPENING ТКГ-СУ HATCH (10 min)

√ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)
Insert extension tool into socket ГЕРМЕТИЗАЦИЯ КРЫШКИ to the hard stop
Insert hatch tool into extension tool socket to the hard stop

00:00:00 Rotate hatch tool in direction of arrow OPEN until it clicks (6-7 turns)
Remove hatch tool from hatch socket

00:03:00 Open and secure hatch in the open position

КСД plug → fitting labeled МЕСТО ЗАГЛУШКИ КСД

Stow hatch and extension tools into docking assembly accessories kit
ПРИНАДЛЕЖНОСТИ СТА (11Ф732.Г4000А1-30)

ПрК Stow docking assembly accessories kit in nominal storage location

4.2.2. DOCKING AND INTERNAL TRANSFER SYSTEM [ССВП] CLAMPS INSTALLATION

(00:30:00)

ПрК

Unstow from kit УКЛАДКА С ЗВБ (11Ф732.Г4000А6-150):

- fast-removing screw clamps (ЗВБ) (sixteen)
- torque wrench for fast-removing screw clamps КЛЮЧ МОМЕНТНЫЙ ДЛЯ З.В. (ЗЗУ 9951.005)

1. CLAMP (sixteen) INSTALLATION

Clamp lever → closed position

Install clamp into sockets on inner flanges of docking assemblies

√ Clamp is firmly seated and clamp jaws are reliably captured by socket shoulders of Soyuz and SM docking assemblies (see Figure 4.2.2.-1)

Clamp screw ↻ manually (to tighten clamp jaws)

2. CLAMP (sixteen) FINAL TIGHTENING

Install torque wrench on clamp screw square pad (label ЗАКР must be facing upwards)

Torque wrench ↻ until it clicks (docking assembly interface will close tighter)

√ clamp is installed without skew

Remove torque wrench from clamp screw square pad

3. BINDING INSTALLED CLAMPS TOGETHER

Engage each clamp spring hook by adjacent clamp ring

(making a loop of cords, see Figure 4.2.2.-2)

Retighten clamps (sixteen) to remove possible slack

Stow torque wrench into kit УКЛАДКА С ЗВБ (11Ф732.Г4000А6-150)

Stow kit in nominal storage location in ПрК

Report completion to **MCC****NOTE****On MCC GO, retighten the clamps once every 60 days (see Step 2).**

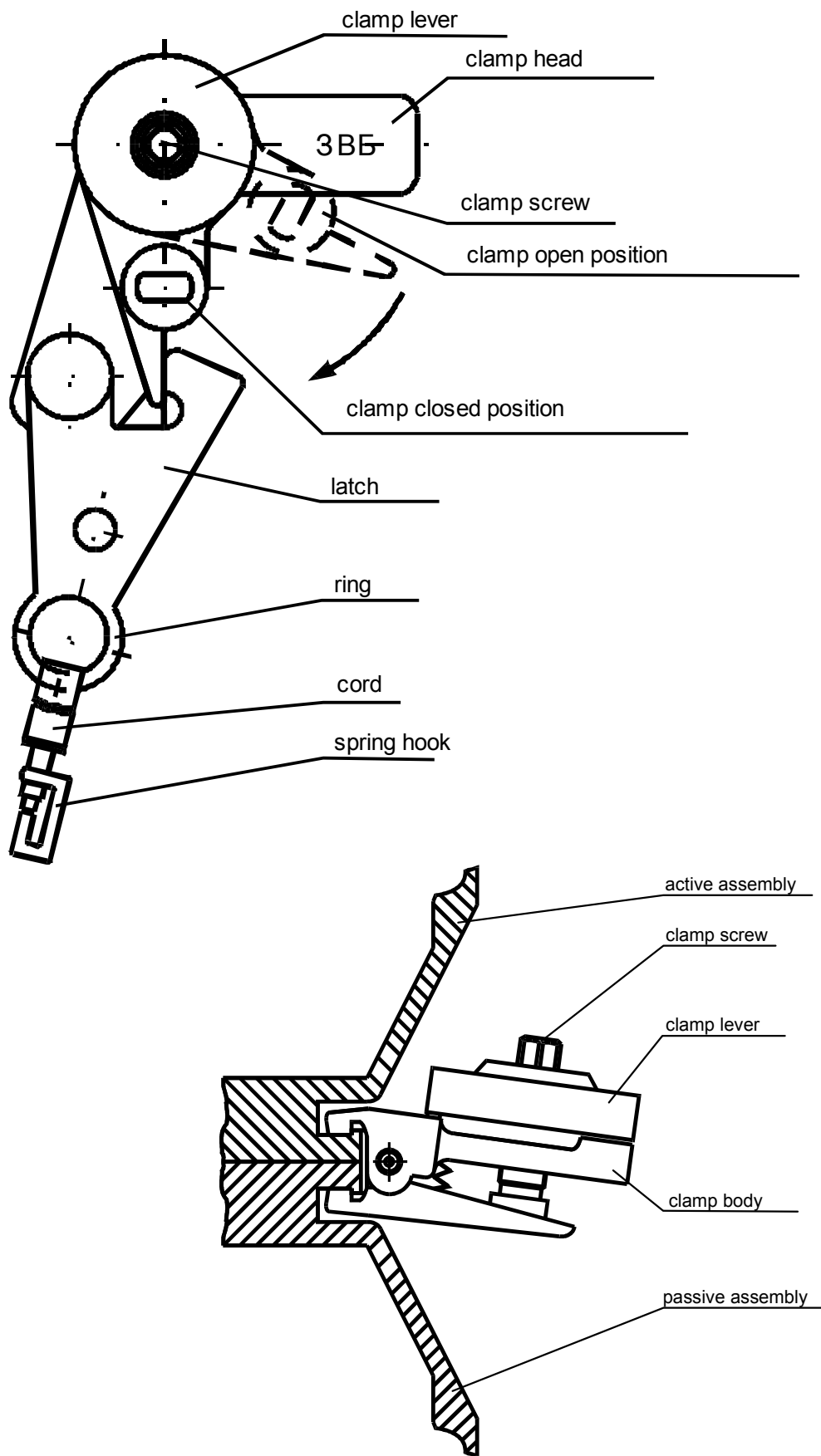


Figure 4.2.2.-1 Fast-removing Screw Clamp

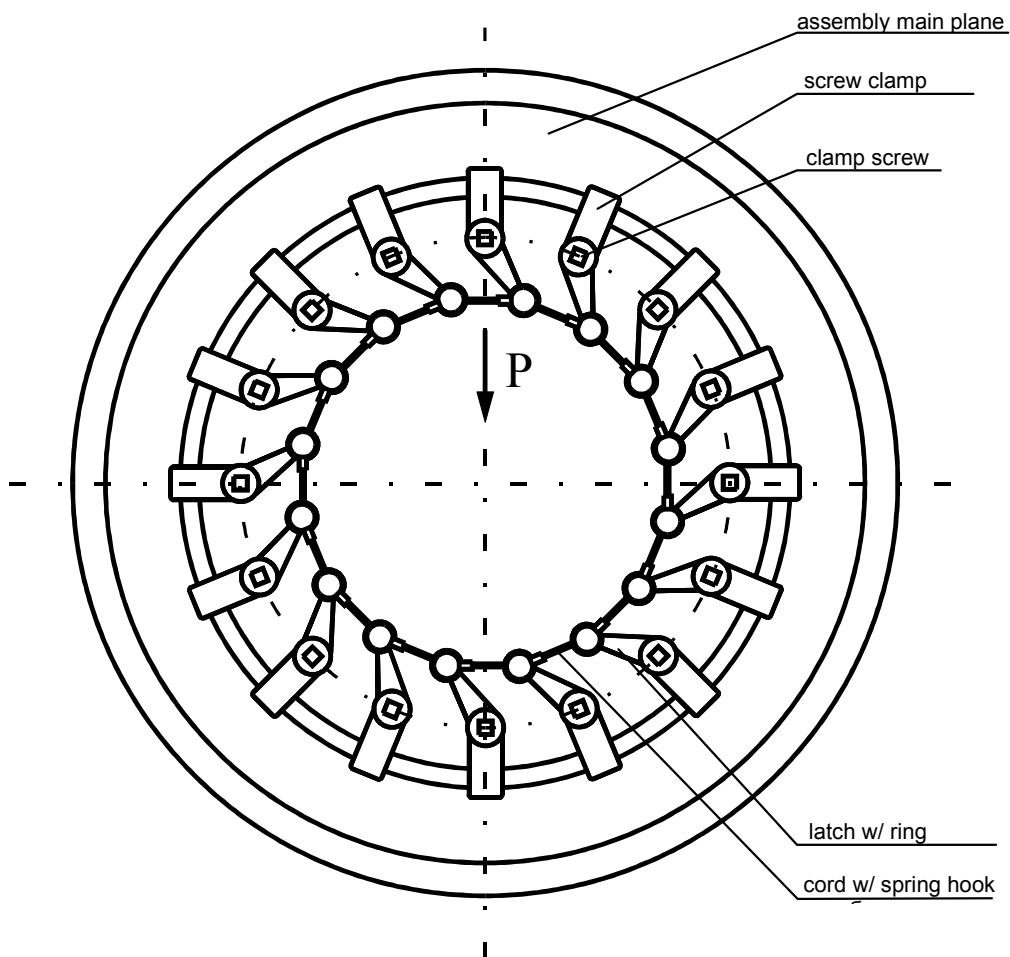


Figure 4.2.2.-2 Clamps Installation Pattern

4.2.3. PROGRESS DEACTIVATION

- ЩО-ЛО Activate lighting
- ПБК ☞ → ВКЛ БЛ РРСТ (*Undocking Inhibit*)
- Manual valve ГЖА БО → ГЖА ОТКЛ (*Gas-Liquid Unit Off*)

4.2.4. AIR DUCT INSTALLATION

- ПрК Remove segments of SM-Progress air duct from their storage locations
- Assemble SM-Progress air duct per air duct installation diagram (see Figure 4.2.4)
- Secure air duct segments along layout route using Velcro

√ ВПрК — rotated towards [PO]

Report to MCC

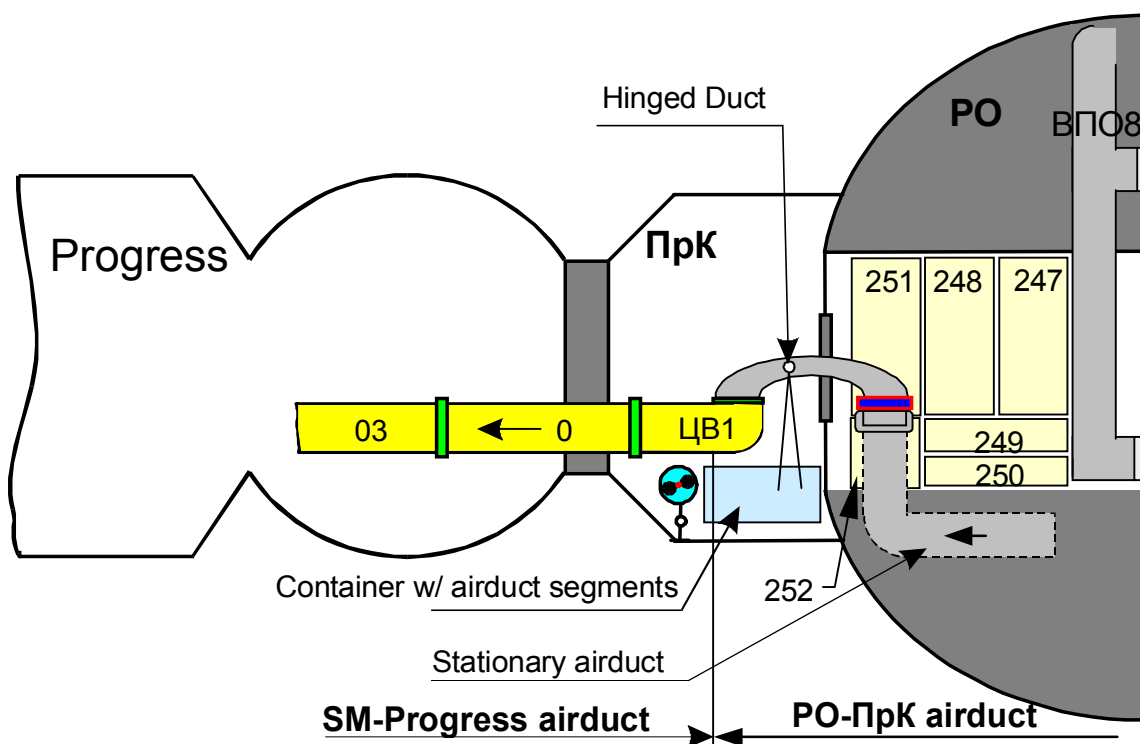


Figure 4.2.4 Air Duct Installation in PO-ПрК area


4.2.5. DIRECTIONAL AIR FLOW SENSOR (ИП-1) INSTALLATION

Install ИП-1 sensor on ПрК-СУ hatch

Connect ИП-1 sensor to depressurization monitoring algorithm

RS Laptop

СМ:СЖО:СОГС

↓  next to this ИП-1 sensor icon



5. OPERATIONS BEFORE PROGRESS UNDOCKING

5.1. AIR DUCT DISASSEMBLY


Progress is on SM ПрК docking port

1. Rotate ВПрК fan
2. Demate (partially) and secure segments of SM – Progress air duct in ПрК, so they would not to interfere with ТКГ-СУ and ПрК-СУ hatches closure (at crew preference)
3. Remove Progress air duct fan and stow it in ПрК

Progress is on FGB ГА lateral docking port

1. Demate (partially) and secure segments of FGB – Progress air duct in ГА, so they would not to interfere with ТКГ-СУ and ГА-СУ hatches closure (at crew preference)
2. Remove Progress air duct fan and stow it in ГА

5.2. PROGRESS ACTIVATION

- ПБК  → ОТКЛ БЛ РРСТ (*Undocking Inhibit Override*)
- Manual valve ГЖА БО → ГЖА ВКЛ (*Gas-Liquid Unit On*)
- ЩО-ЛО Deactivate lighting


5.3. DIRECTIONAL AIR FLOW SENSOR (ИП-1) REMOVAL

ИП-1 sensor, located on the docking port to which Progress is docked, needs to be excluded from depressurization monitoring algorithm

- RS Laptop

| |
|-------------|
| СМ:СЖО:СОГС |
|-------------|

 - for ПрК-СУ hatch
- | |
|--------------|
| ФГБ:СЖО:СОГС |
|--------------|

 - for ГА-СУ hatch
- ↓  next to icon corresponding to ИП-1 sensor assigned for removal
- Remove ИП-1 sensor from hatch and temp secure (tie to frame) nearby

1. ТКГ-СУ HATCH CLOSURE (10 min)

Unsecure and firmly shut hatch

√ Hatch tool tab → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)

Insert extension tool into socket ГЕРМЕТИЗАЦИЯ КРЫШКИ to the hard stop

Insert hatch tool into extension tool socket all the way to the hard stop

Rotate hatch tool in direction of arrow CLOSE until it clicks (6-7 turns)

Stow extension tool 11Ф732.Г4022-0 into docking assembly accessories kit
11Ф732.Г4000А1-30

Keep hatch tool 11Ф732.Г1021-0А to close hatch ГА-СУ (ПрК-СУ) later on

2. ГА-СУ (DSM) (ПрК-СУ) HATCH CLOSURE (10 min)

Unsecure and firmly shut hatch

√ Hatch tool → РАБОЧЕЕ ПОЛОЖЕНИЕ (*Working Position*)

Insert hatch tool into socket ГЕРМЕТИЗАЦИЯ КРЫШКИ to the hard stop

Rotate hatch tool in direction of arrow CLOSE until it clicks (6-7 turns)

√ all roller disappear behind hatch

Stow hatch tool into docking assembly accessories kit 11Ф732.Г4000А1-30

FGB 230 (ПрК) Stow kit in nominal storage location

√ КВД ГА-СУ (DSM) → ЗАКРЫТО (*Closed*) (when undocking from ГА-СУ
(DSM) node)

√ КВД ПрК-ТК → ЗАКРЫТО (*Closed*) (when undocking from ПрК-СУ node)

Report to MCC

3. PERFORM LEAK CHECK FOR CLOSED HATCHESNOTE

Prior to starting leak check, vestibule will be depressurized via КПЛ.

√ KKT — 3AKP (*Closed*)

Pressure gauge [MB] leak check

Plug 3Г19 ↔ KKT

[MB] →|← KKT

KKT → ОТКР (*Open*)

↖ P.vestibule[MB] < 25 mm Hg

KKT → 3AKP (*Closed*)

↖↖ ΔP[MB] ≤ 30 mm Hg (every minute over 5 min period)

Vesibule leak check

KKT → ОТКР (*Open*)

↖↖ ΔP[MB] ≤ 1 mm Hg (every 5 min over 30 min period)

KKT → 3AKP (*Closed*)

[MB] ↔ KKT

Plug 3Г19 →|← KKT

Stow [MB] in nominal storage location