Approved per signature page

SERVICE MODULE

LIFE SUPPORT SYSTEM
(СОЖ)

SM

Revision Log

1 E	01 Oct 00
2 E	01 Oct 00
3 E	01 Oct 00
4 E	01 Oct 00
5 E	01 Oct 00
6 E	01 Oct 00
7 E	01 Oct 00
1—1 E	01 Oct 00
2—1 E	01 Oct 00
2—2 E	01 Oct 00
2—3 E	01 Oct 00
2—4 E	01 Oct 00
2—5 E	01 Oct 00
2—6 E	01 Oct 00
2—7 E	01 Oct 00
2—8 E	01 Oct 00
2—9 E	01 Oct 00
2—10 E	01 Oct 00
2—11 E	01 Oct 00
2—12 E	01 Oct 00
2—13 E	01 Oct 00
2—14 E	01 Oct 00
2—15 E	01 Oct 00
2—16 E	01 Oct 00
2—17 E	01 Oct 00
2—18 E	01 Oct 00
2—19 E	01 Oct 00
2—20 E	01 Oct 00
2—21 E	01 Oct 00
2—22 E	01 Oct 00
2—23 E	01 Oct 00
2—24 E	01 Oct 00
2—25 E	01 Oct 00
2—26 E	01 Oct 00
3—1 E	01 Oct 00
3—2 E	01 Oct 00
3—3 E	01 Oct 00
4—1 E	01 Oct 00
4—2 E	01 Oct 00
4—3 E	01 Oct 00
4—4 E	01 Oct 00
4—5 E	01 Oct 00
4—6 E	01 Oct 00
4—7 E	01 Oct 00
4—8 E	01 Oct 00
4—9 E	01 Oct 00
4—10 E	01 Oct 00
4—11 E	01 Oct 00
4—12 E	01 Oct 00
4—13 E	01 Oct 00
4—14 E	01 Oct 00
4—15 E	01 Oct 00
4—16 E	01 Oct 00
4—17 E	01 Oct 00

TABLE OF CONTENTS

INTRODUCTION

These СОЖ crew procedures contain information for the crew about procedures and rules for water supply equipment (СВО), food supply subsystem (СОП), sanitary hygiene equipment (СГО) and their schematics

These crew procedures are intended for trained crew members 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

These crew procedures are developed per БВС software release 4.30.14 and RS Laptop software dated 07.03.00

ACRONYMS AND ABBREVIATIONS

АСУ	- toilet
БВ	- switch panel
БД-СВ	- flush water line sensor
БД-У	- urine line sensor
БКВ	- water conditioning unit
БКО	- purification column unit
БКС	- onboard cable network
БП	- pump unit
БРПК	- condensate separation and pumping unit
БРП-М	- water distribution and heating unit
ВСУ	- toilet cabin fan
ГЖС	- gas-liquid mixture
ДКиВ	- pretreat and water dispenser
ДнаЗ-М	- **Report to МСС-М**
ДпоУЗ-М	- **√ МСС-М**
ЕДВ	- water container
ЕДП	- sample container
Е-К	- pretreat container
загл	- cap
ЗАКР	- close, closed
ЗИП	- spares kit
ИКР	- Rodnik system status panel
ИПЖ	- liquid carryover indicator
КАВ	- humidity condensate
КБО	- trash container
КПВ	- potable water container
КТВ	- non-potable water container
КТО	- solid waste container
Кл	- valve
клав	- pushbutton, pb

кн - pb, pushbutton

МВ - pressure gauge
МН - mini-pump
МНР - air-water separator (toilet system)
МНР-НС - air-water separator assembly МНР-9
МОК - condensate line
МП - urine receptacle

НОК - condensate pump
Н/С - off-nominal situation

ОТКЛ - off, deactivate
ОТКР - open, opened

поУЗ-М - **on МСС-М GO**
ППС - system power panel
ПР - receptacle (toilet solid waste)
ПрК - transfer tunnel
ПСС - caution and warning panel
ПрУ - dispenser
ПУРВ-К - condensate water processor control panel
ПхО - transfer compartment
перекл - sw, switch

РН - manual pump
РО - working compartment

СвД - LED, light emitting diode
СВО - water supply system
СГО - sanitary hygiene equipment
СЛГ - personal hygiene items
СМ - service module
СОП - food supply subsystem
СОТ - wring collector
СПК-У - urine collection and pretreat assembly
СПП - water quality indicator
СРВ-К2М - condensate water processor
с/с - comm pass

ТКГ - Progress cargo vehicle

ФГБ - FGB (Functional Cargo Block)
ФГС - gas-liquid mixture filter

ЭПП - electrical food warmer

SYMBOLS

□ - illuminated
▪ - blinking
■ - not illuminated
◨ - indicator status changes when command is issued
⏻ - sw → On (i.e. up relative to label on panel)
⏼ - sw → Off (i.e. down relative to label on panel)
⏻ВЕНТ → ОСНОВН - sw labeled ВЕНТ → ОСНОВН (if there are two positions labeled ОСНОВН and РЕЗЕРВ, respectively)
⏼ ВЕНТ → РЕЗЕРВ - sw labeled ВЕНТ → РЕЗЕРВ (if there are two positions labeled ОСНОВН and РЕЗЕРВ, respectively)
- mouse left click
- mouse left double click
- mouse right click
- rotate clockwise
- rotate counterclockwise
- rotate clockwise to stop
- rotate counterclockwise to stop
- adjust by rotating
→ - place physical device in designated state
- disconnect
- connect
- press pushbutton
- press pushbutton to lock
- press pushbutton to release
√ - check (in case of discrepancy, attempt a corrective action one time only
- verify
- continuously monitor
- verify aurally
ЗВУК - acknowledge audio alarm
15:46:28 - 15 h 46 min 28 sec

******* - off-nominal situation
****

****

■ POT EMTY - - advisory annunciation (not mandatory for monitoring)

$P.H_2O$ - water vapor partial pressure
$P.O_2$ - oxygen partial pressure
P(МВ) - pressure per pressure gauge
$P.CO_2$ - CO_2 partial pressure
ΔP.O2(Laptop,РАСЧ) - one value pressure delta, obtained by different methods

- repeat steps

1. GENERAL INSTRUCTIONS

1.1. CREW RESPONSIBILITIES

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

1. Perform operations per these crew procedures and **MCC-M i**nstructions in accordance with the crew functional responsibilities and current status of the onboard systems.
2. **Report to MCC-M** completed operations and any system problems at earliest available comm pass.
3. Monitor systems operation per these crew procedures and **MCC-M** instructions.
4. When there is a deviation from nominal systems operation, the crew is responsible for the following actions:
   - record time when the deviation (malfunction) was detected
   - record the nature of the deviation (malfunction)
   - **report to MCC-M** at the earliest available comm pass
5. Upon detection of an off-nominal situation, documented in these crew procedures, take actions to eliminate or to localize it per these crew procedures.
6. Prior to operations, perform indicator checks on the control panels to be used.
7. Output commands via control panels using pushbuttons (no lockout feature) by pressing them to the stop for 1 – 2 sec.
8. Record actual time spent performing operations.
9. When working with hardware equipped with protective caps and covers:
   - remove caps and covers before operations
   - re-install caps and covers after operations

1.2. SAFETY PRECAUTIONS

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

1. When working with the system, use only hardware, tools, and protective devices, designated by these crew procedures or on MCC-M GO
2. Upon detection of an off-nominal situation, not documented in these crew procedures, the crew is responsible for the following actions:
   - stop working with the system
   - record time when the off-nominal situation was detected
   - record the nature of the off-nominal situation
   - report to MCC-M at earliest available comm pass
3. Before replacing fuses, powerdown appropriate systems and/or instruments.
   Replace fuse according to voltage given on the fuse.
   Repeat fuse replacement **on MCC-M GO**

2. WATER SUPPLY SYSTEM ([СВО])

2.1. CONDENSATE WATER PROCESSOR ([СРВ-К2М])

NOTE
Consume water when □ HOT READY

2.1.1. [СРВ-К2М] ACTIVATION

(00:05:00)

NOTE
Indicator lights SYS PWR, VLV 1(3) OP, H2O HTR come on for 1 min when pb SHOW STATUS LIGHTS is depressed in conformity with the system's current status

ПУРВ-К
- ↓ PANEL POWER ON — □ LED Д1
- H2O DISTRIB & HEAT
- ↓ CNDS H2O PROC — □ SYS PWR (on call)

2.1.2. [СРВ-К2М] ACTIVATION FOR CONDENSATE COLLECTION

(00:15:00)

behind 436, 201, 401 — **on МСС-М GO**
- КЛ-1(3) → ОТКРЫТЬ (open) — □ VLV 1(3) OP (on call)
- 7Кл4 → ЗАКРЫТ (Closed)
- 7Кл3 → В СРВ-К (to СРВ-К)

NOTE
ИПЖ must be installed 5 days after БРПК1(2) separator activation

2.1.3. CONTINUOUS WATER HEATING MODE TRANSITION

(00:02:00)

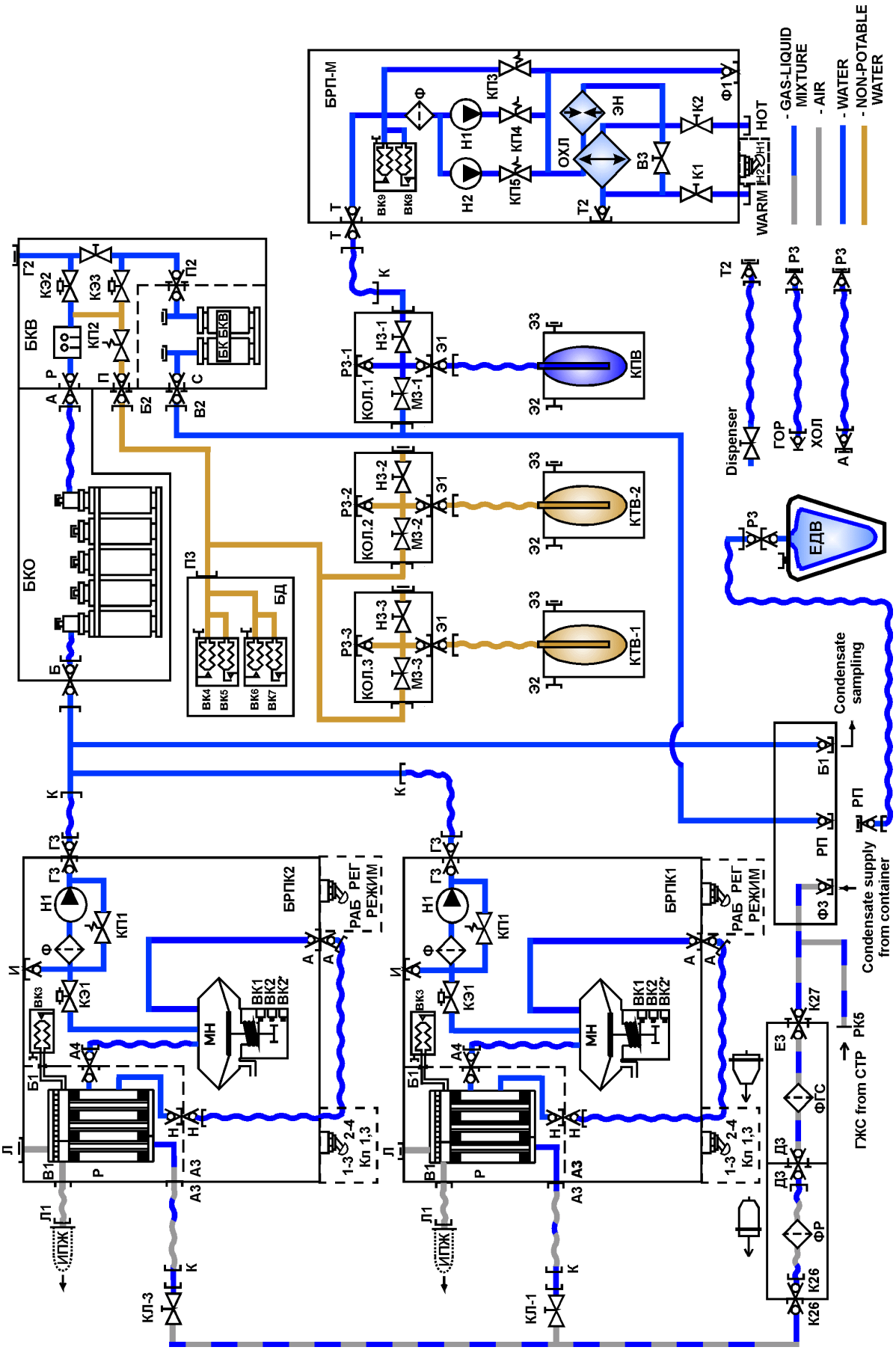
00:00:00 ПУРВ-К
1. ↓ H2O HEATER ON
   □ H2O HTR (on call)
   CONTINUOUS HEAT

00:20:00
- □ HOT READY

2. CONTINUOUS WATER HEATING MODE DEACTIVATION

ПУРВ-К
- CONTINUOUS HEAT
- ↓ H2O HEATER OFF

2.1.4. [СРВ-К2М] SCHEMATIC



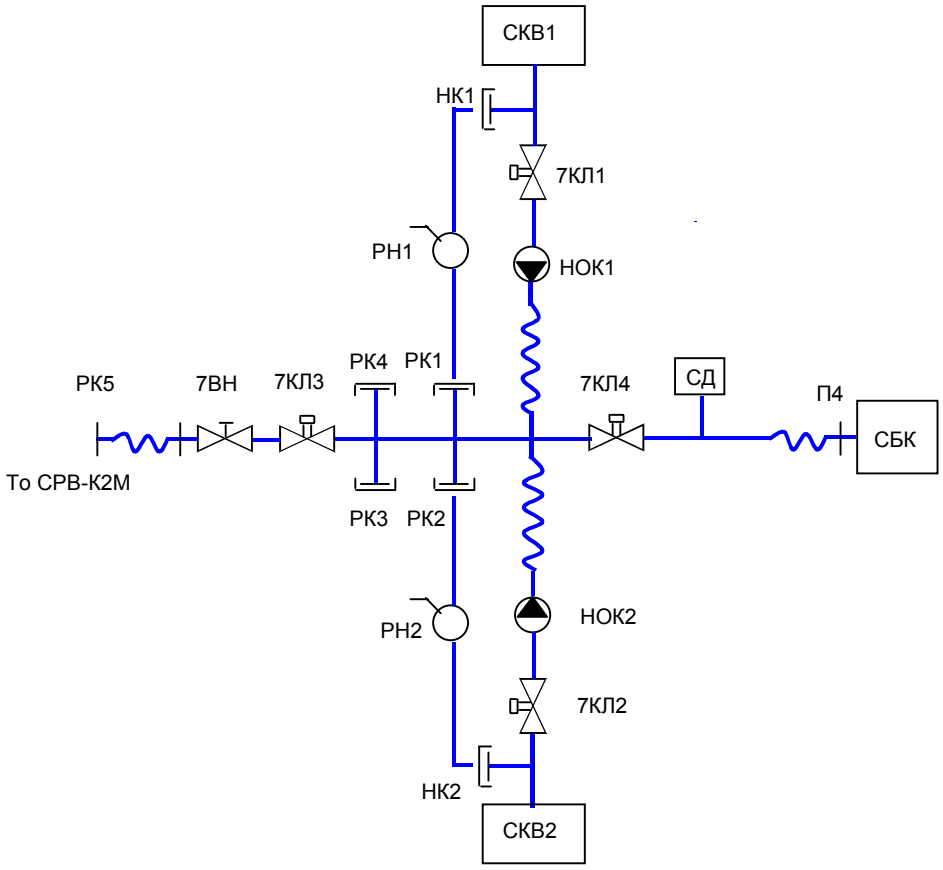


Figure 2.1.4-1. Condensate Line Schematic

ABBREVIATIONS USED IN SCHEMATIC:

БД	- sensor unit
ВК	- limit switch
КОЛ	- manifold
КП	- safety valve
ОХЛ	- cooler
Р	- separator
СБК	- condensate container
СД	- pressure indicator
СКВ	- air conditioner
ФР	- filter-reactor

2.1.5. FOOD PACKETS REHYDRATION

(00:30:00)

ПУРВ-К √ ⏻ H2O DISTRIB & HEAT
00:00:00 ↓ H2O HEATER ON □ H2O HTR (on call)
00:20:00 ◅ □ HOT READY
sw WATER QUANTITY mL → 25 --- 200 (CONTINUOUS)

БРП-М Packet →|← vlv HOT (WARM) (american packets via adapter with needle SEM46110793-301)
vlv HOT (WARM) → OPEN
ПУРВ-К ↓ H2O DSPR PMP ON □ DISP RDY
Hold packet pressed to vlv HOT (WARM) until ■ DISP RDY (or until packet is filled during continuous water supply)

NOTE

Open manual valve [B3] in the direction of Tmax to increase warm water temperature up to 45°C

БРП-М vlv HOT (WARM) → CLOSE
Packet ←|→ vlv HOT (WARM)
Adapter → storage location

2.1.6. DRINKING WARM WATER THROUGH DISPENSER

(00:30:00)

ПУРВ-К √ ⏻ H2O DISTRIB & HEAT
00:00:00 ↓ H2O HEATER ON
□ H2O HTR (on call)

behind 433 cnctr T2 of hose T2-ПрУ→|← cnctr T2 of БРП-М
Mouthpiece adapter →|← dispenser tip
00:20:00 ◅ □ HOT READY
sw WATER QUANTITY mL → 25 --- 200 (CONTINUOUS)
↓ on dispenser (and hold)
↓ H2O DSPR PMP ON □ DISP RDY

After receiving desired amount of water:
↓ H2O DSPR PMP OFF ■ DISP RDY
Release dispenser pushbutton
Mouthpiece adapter ←|→ dispenser and → storage location
cnctr T2 of hose T2-ПрУ ←|→ cnctr T2 of БРП-М
Hose T2-ПрУ → storage location

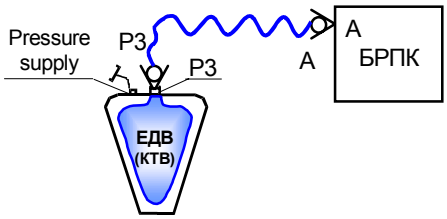
2.1.7. WATER REGENERATION FROM ЕДВ OR NON-POTABLE WATER CONTAINER [КТВ]

(00:30:00)

Behind 131 √ condensate container is installed
√ pb ON — ⭳ (on 7СД)
√ condensate container valve-indicator — ОТКР (Open) (↶)

Behind 201 7Кл4 → В СБОРНИК КОНДЕНСАТА (to condensate container)
Behind 401 7Кл3 → ЗАКРЫТ (Cosed)

Behind 433, БРПК Hose [А-Н] ↤⊢↦ cnctr А of БРПК
☝ РЕЖИМ (mode) → РЕГ (Adjust)
Demate hoses from cnctr А4, А3
Configure equipment (see Figure)



ПУРВ-К □ SEP 1(2) FULL

When water regeneration is complete:
◅ □ POT FULL
or: ■ SEP 1(2) FULL

БРПК Hose [Р3-А] ↤⊢↦ ЕДВ or КТВ-1(2) and БРПК
cnctr А4, А3 of БРПК →|← hoses
Mate cnctr А of hose А-Н БРПК
☝ РЕЖИМ (mode) → РАБ (operating)
Hose [Р3-А] → storage location

Behind 201 7Кл4 → ЗАКРЫТ (Closed)
Behind 401 7Кл3 → В СРВ-К (to condensate water regeneration system)

2.1.8. THE COMPRESSOR UNIT OF THE WATER CONDITIONING UNIT FLUSHING

(00:15:00)

Flushing of the compressor unit of the water conditioning unit is performed following compressor unit or water conditioning unit replacement

Behind 436 Empty ЕДВ →|← cnctr РП (via hose Р3-РП)

Behind 433:

00:00:00 КОЛ1 vlv М3-1 → ЗАКР (Close)
24:00:00 vlv М3-1 → Откр (Open)
ЕДВ ↤⊢↦ РП (water in it is regenerated into [СРВ-К2М])

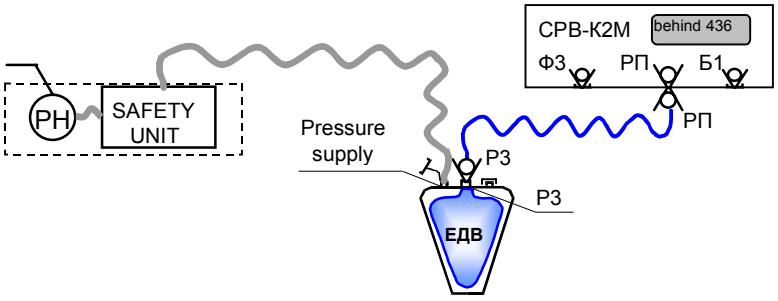
2.1.9. POTABLE WATER CONTAINER REFILLING FROM ЕДВ

(00:30:00)

To refill, use hose Р3-РП

ПУРВ-К □ POT EMTY

Configure equipment:



■ POT EMTY

Safety unit handle → ОТКР (Open)

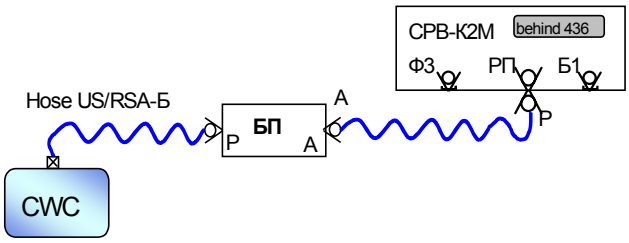
Refill potable water container until □ POT FULL, by working manual pump

Safety unit handle → ЗАКР (Close)

Disassemble equipment

2.1.10. POTABLE WATER CONTAINER REFILLING FROM CWC

Configure equipment:



	ПУРВ-К	□ POT EMTY
	behind 231, ИКР	PNL PWR
		PUMP UNIT
00:00:00	БП	
:15: --- :20:	ПУРВ-К	◄ □ POT FULL
	БП	
	ИКР	PUMP UNIT
		PNL PWR
		Disassemble equipment

2.1.11. WATER AND HUMIDITY CONDENSATE SAMPLING

2.1.11.1. HUMIDITY CONDENSATE SAMPLING USING RUSSIAN SAMPLER

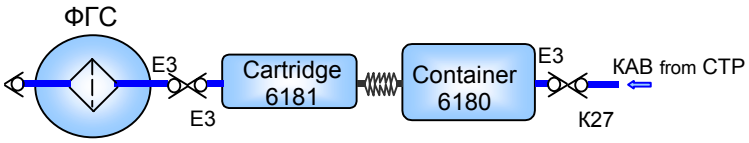
(00:30:00)

Prepare:
- humidity condensate container КАВ 6180
- sample collector cartridge 6181 from spares

Behind 131 1. √ condensate container is installed
√ pb ON — ⭳ (on 7СД)
√ condensate container valve-indicator — ОТКР (Open) (↶)

201 7Кл4 → В СБОРНИК КОНДЕНСАТА (to condensate container)
401 7Кл3 → ЗАКРЫТ (Closed)

Configure equipment:



201 2. 7Кл4 → ЗАКРЫТ (Closed)
401 7Кл3 → В СРВ-К (to condensate water regeneration system)
Leave the equipment configured for 3 days

After 3 days:
201 3. 7Кл4 → В СБОРНИК КОНДЕНСАТА (to condensate container)
401 7Кл3 → ЗАКРЫТ (Closed)
cnctr E3 of sampler cartridge ↤⊢↦ gas-liquid mixture filter
cnctr K27 of line hose ↤⊢↦ cnctr E3 of humidity condensate container and
→|← cnctr E3 of gas-liquid mixture filter

201 4. 7Кл4 → ЗАКРЫТ (Closed)
401 7Кл3 → В СРВ-К (to condensate water regeneration system)
Sampler cartridge ↤⊢↦ humidity condensate container

NOTE

When disconnecting cartridge from sampler container, use towels to prevent condensate spillage

Stow disconnected cartridge in [СРВ-К2М] area

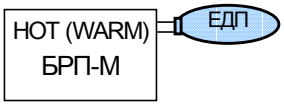
Record sampling date on humidity condensate container
Humidity condensate sampler → return container

2.1.11.2. WATER SAMPLING FROM WATER DISTRIBUTION AND HEATING UNIT (БРП-М)

NOTE

1. **On MCC-M GO** perform operation prior to replacement of an expired purification column unit
2. Prior to sampling from vlv WARM, flush БРП-М line (see RODF: ACTIVATION/DEACTIVATION)

Sample container (ЕДП) →|← vlv HOT (WARM) (to the guide mark)



ПУРВ-К
sw WATER QUANTITY mL → 100
vlv HOT (WARM) → OPEN
↓ H2O DSPR PMP ON □ DISP RDY

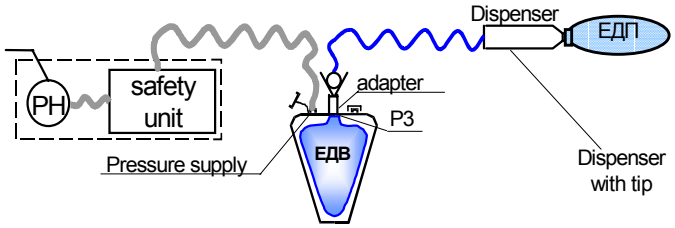
◅ ■ DISP RDY

БРП-М
vlv HOT (WARM) → CLOSE
Sample container ←|→ vlv HOT (WARM)
Fill up the required number of sample containers
Label sample container with filling date
Sample container → storage location

2.1.11.3. WATER SAMPLING FROM ЕДВ USING RUSSIAN WATER SAMPLER

(00:30:00)

Fully insert dispenser tip into sample container (to the guide mark)



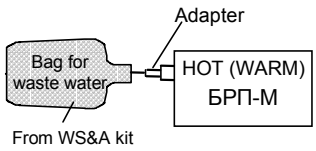
Safety unit handle → ОТКР (Open)
Dispenser coupling → arrow direction until white triangle is aligned with red dot
Perform 4-5 pumping cycles with manual pump
↓ on dispenser (and hold)
◅ water droplets appear from sample container drain ports
After water droplets appear:
Release dispenser pushbutton
Dispenser coupling → initial position
Safety unit handle → ЗАКР (Close)
Sample container ←|→ dispenser
Label sample container with sampling date and location
Prepare sample container for return

2.1.11.4. WATER SAMPLING FROM POTABLE WATER CONTAINER USING U.S. WATER SAMPLERS

(01:30:00)

Prepare U.S. kits for work (stowed in FGB):
- WS&A kit for water chemical analysis (subpacket for potable water sampling)
- WMK kit for water micro biological analysis

00:00:00 1. ↓ H2O HEATER ON □ H2O HTR (on call)
00:20:00 ◅ □ HOT READY



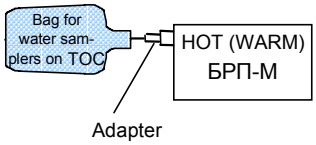
2. <u>БРП-М FLUSHING (50 mL)</u>
БРП-М Wipe vlv WARM (HOT)
Configure equipment (see Figure)

ПУРВ-К sw WATER QUANTITY mL → CONTINUOUS
БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON □ DISP RDY
Fill waste water bag (two pumping cycles)
↓ H2O DSPR PUMP OFF ■ DISP RDY
БРП-М vlv WARM (HOT) → CLOSE
Waste water bag ←|→ adapter

NOTE
Use a new adapter for each valve and do not disconnect it until all samples have been taken

Waste water bag → small stowage bag (from WS&A kit) and → discard

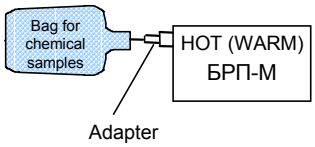
3. <u>100 mL SAMPLING</u>
Label bag of water samples for analysis on TOC (from WS&A kit) with sampling date and location
Water sample bag →|← adapter



БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON □ DISP RDY
Fill water sample bag (four pumping cycles)
↓ H2O DSPR PUMP OFF ■ DISP RDY
vlv WARM (HOT) → CLOSE
Water sample bag ←|→ adapter

4. <u>750 mL SAMPLING (TWO PORTIONS)</u>
Label the bag for post-flight chemical analysis (from WS&A kit) with sampling date and location
Bag for chemical samples →|← adapter

First portion sampling (375 mL):



БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON
□ DSPR RDY
Fill sample bag (fifteen pumping cycles)
↓ H2O DSPR PUMP OFF ■ DSPR RDY
vlv WARM (HOT) → CLOSE

Second portion sampling (375 mL):

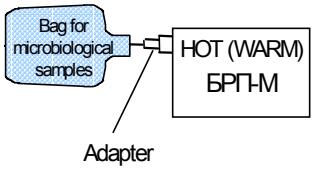
00:00:00 ↓ H2O HEATER ON □ H2O HTR (on call)

NOTE
During repeated water heating, do not disconnect bag from adapter

00:20:00 ◅ □ HOT READY

БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON □ DISP RDY
Fill sample bag (fifteen pumping cycles)
↓ H2O DSPR PUMP OFF ■ DISP RDY
vlv WARM (HOT) → CLOSE
Sample bag ←|→ adapter and → large stowage bag

5. 200 mL SAMPLING (TWO PORTIONS)
Label bag for in-flight microbiological analysis (from WMK kit) with sampling date and location
Bag →|← adapter



150 mL sampling:

БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON □ DISP RDY
Fill sample bag (six pumping cycles)
↓ H2O DSPR PUMP OFF ■ DISP RDY
vlv WARM (HOT) → CLOSE

50 mL sampling:

00:00:00 ↓ H2O HEATER ON □ H2O HTR (on call)

NOTE
During repeated water heating, do not disconnect bag from adapter

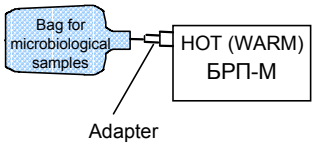
00:20:00 ◅ □ HOT READY

БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON □ DISP RDY
Fill sample bag (two pumping cycles)

↓ H2O DSPR PUMP OFF ■ DISP RDY
vlv WARM (HOT) → CLOSE
Sample bag ←|→ adapter and → large stowage bag

6. 1000 mL SAMPLING (TWO PORTIONS)
Label bag for post-flight microbiological sample (from WMK kit) with sampling date and location
Sample bag →|← adapter

475 mL sampling:



БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON
□ DISP RDY
Fill sample bag (19 pumping cycles)
↓ H2O DSPR PUMP OFF ■ DISP RDY
vlv WARM (HOT) → CLOSE

525 mL sampling:

00:00:00 ↓ H2O HEATER ON □ H2O HTR (on call)

NOTE

During repeated water heating, do not disconnect bag from adapter

00:20:00 ◅ □ HOT READY

БРП-М vlv WARM (HOT) → OPEN
ПУРВ-К ↓ H2O DSPR PUMP ON □ DISP RDY
Fill sample bag (twenty one pumping cycles)
↓ H2O DSPR PUMP OFF ■ DISP RDY
vlv WARM (HOT) → CLOSE
Sample bag ←|→ adapter and → large stowage bag
Prepare large stowage bags for return

2.1.11.5. HUMIDITY CONDENSATE SAMPLING USING U.S. WATER SAMPLER

(00:40:00)

Prepare:
- U.S. WS&A kit (subpacket for humidity condensate sampling)

1. WATER SUPPLY LINE FLUSHING

behind 436 ЕДВ labeled 'FOR REGENERATION' →|← cnctr Б1 СРВ-К2М via hose [P3-A]
Leave the equipment configured for 2.5 hours

After 2.5 hours:

2. SAMPLING

ЕДВ labeled 'FOR REGENERATION' with hose←|→ cnctr Б1 СРВ-К2М
Adapter →|← bag for humidity condensate sampling and →|← cnctr Б1
◅ humidity condensate flows into bag and none of the connections is leaking
Leave assembled configuration for 6-10 hours

After 6-10 hours:

3. Adapter – sample bag assembly ←|→ cnctr Б1
Adapter ←|→ sample bag
Label sample bag with sampling date and location
Sample bag → Ziplock bag and prepare for return
Adapter → another Ziplock bag for storage

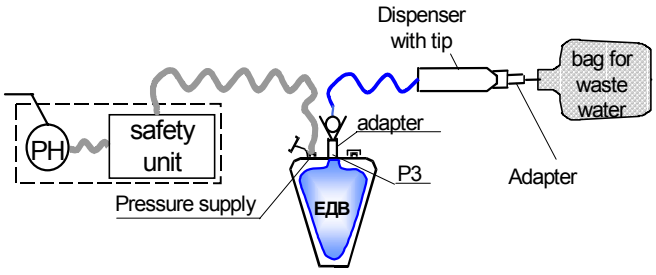
2.1.11.6. WATER SAMPLING FROM ЕДВ USING U.S. WATER SAMPLER

(00:40:00)

Prepare:
- U.S. WS&A kit for water sampling (located in FGB)

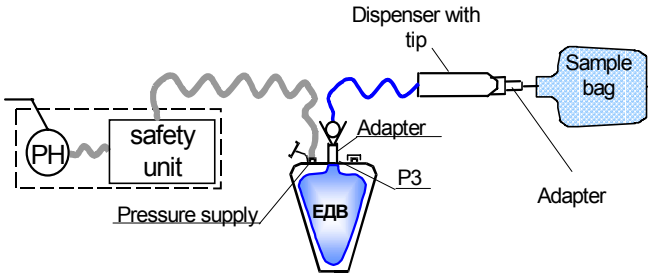
1. WATER SUPPLY LINE FLUSHING

Configure equipment:



Safety unit handle → ОТКР (Open)
Dispenser coupling → arrow direction until white triangle is aligned with red dot
Perform 4-5 pumping cycles using manual pump
↓ on dispenser (and hold)
◅ water flows into waste bag
Release dispenser pushbutton (after waste bag is full)
Bag←|→ adapter and → discard

2. SAMPLING
Sample bag →|← adapter



Perform 4-5 pumping cycles using manual pump
↓ on dispenser (and hold)
√ sample bag is full (up to 5 min)

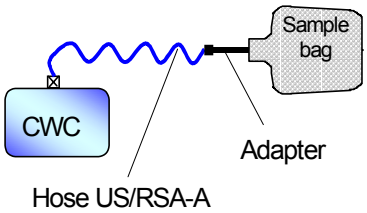
Release dispenser pushbutton
Safety unit handle → 3АКР (Close)
Dispenser coupling → initial position
Adapterr – sample bag assembly ←|→ dispenser
Bag ←|→ adapter
Label sample bag with sampling date and location
Sample bag → Ziplock bag and prepare for return
Adapter → another Ziplock bag for storage

2.1.11.7. WATER SAMPLING FROM CWC CONTAINERS

(00:30:00)

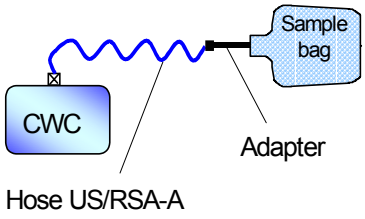
Prepare:
- hose US/RSA-A 528-20870-5
- adapter SED 46114380-301
- small waste bags KLSK 270288-306
- bags for post-flight chemical analysis KLSK 270288-305
- large Ziplock bags 90-260A8 for storage

1. Configure equipment:



Flush hose and adapter, by squeezing CWC container
avoiding overfill of the bag
Disconnect waste bag and → discard

2. Sample bag →|← adapter



Label bag with sampling date, time and information from CWC
Fill sample bag, by compressing container (sample volume – √ **МСС-М**)
Sample bag ←|→ adapter and → Ziplock bag for storage
Disassemble equipment
Hose, adapter → storage location

2.1.12. SYSTEM DEACTIVATION

(00:15:00)

ПУРВ-К ↓ H2O HEATER OFF ■ H2O HTR (on call)
↑ CONTINUOUS HEAT

Behind 131 √ condensate container is installed
√ pb ON — ↓ (on 7СД)
√ condensate container valve-indicator — ОТКР (Open) (↶)
behind 201 7Кл4 → В СБОРНИК КОНДЕНСАТА (to condensate container)
behind 401 7Кл3 → ЗАКРЫТ (Closed)

behind 436 vlv 1(3) → ЗАКРЫТЬ (Close)
ПУРВ-К ■ VALVE1 (3) (on call)
↓ CNDS H20 PROC ■ SYS PWR (on call)
↑ H2O DISTRIB & HEAT
↓ PANEL POWER OFF ■ LED Д1

2.1.13. [СРВ-К2М] MALFUNCTION

1.
****
ПУРВ-К □ LOW QUAL
****
√ МСС-М

2.
****
ПСС □ OTHER **ЗВУК**
RS Laptop **'Проверь СРВ-К'** (Check [СРВ-К])
ПУРВ-К □ POT FULL
****

Manual vlv M3 (of full non-potable water container) → ЗАКР (Close)
00:00:00 Manual vlv M3 (of the other non-potable water container) → Откр (Open)
:05:---:08: ПУРВ-К ■ POT FULL

on MCC-M GO CM:COTP:Commands
cmd T_OFSNOK (НОК alarm Cancel)
Execute

CM:COTP:CTP:MOK
proc FT_207 (СКВ1 and НОК1 Activation)
(**proc** FT_208 (СКВ2 and НОК2 Activation))
00:00:00 **Execute**
00:00:20 ◅ НОК1(2)

on MCC-M GO Repeat regeneration of water from non-potable water container-1 (2) (see 2.1.7)

3.
****
ПСС □ OTHER **ЗВУК**
RS Laptop **'Проверь СРВ-К'** (Check [СРВ-К])
ПУРВ-К □ SEP 1(2) EXP
****

Behind 131 √ condensate container is installed
√ pb ON — ⭳ (on 7СД)
√ condensate container valve-indicator — ОТКР (Open) (↶)
behind 201 7Кл4 → В СБОРНИК КОНДЕНСАТА (to condensate container)
behind 401 7Кл3 → ЗАКРЫТ (Close)
behind 436 КЛ-1(3) → ЗАКРЫТЬ (Close)

on MCC-M GO CM:COTP:Commands
cmd T_OFSNOK (НОК alarm Cancel)
Execute

CM:COTP:CTP:MOK
proc FT_207 (СКВ1 and НОК1 Activation)
(**proc** FT_208 (СКВ2 and НОК2 Activation))
00:00:00 **Execute**
00:00:20 ◅ НОК1(2)
√ МСС-М

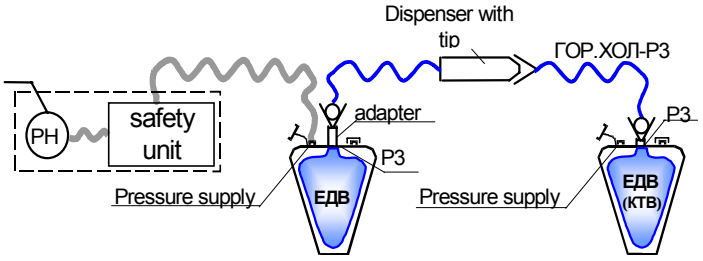
2.2. [СВО-3В] SYSTEM OPERATION

2.2.1. WATER SUPPLY LINE FLUSHING

(00:20:00)

The line must be flushed if system was not used for one month and more

Configure equipment:



Safety unit handle → ОТКР (Open)
Dispenser coupling → arrow direction until white triangle is aligned with red dot

Perform 4-5 pumping cycles using manual pump
↓ on dispenser (for 5 sec)

Safety unit handle → ЗАКР (Close)
Dispenser coupling → initial position
Hose ГОР.ХОЛ-Р3 ←|→ dispenser and non-potable water container (ЕДВ)
Label ЕДВ with "FOR REGENERATION"

2.2.2. ЕДВ ASSEMBLY

(00:30:00)

Line up ЕДВ covers and housings (having the same serial numbers)
Remove shroud from cover by removing screws
Place insert into ЕДВ bottom (with knot on nylon string facing inside the groove)

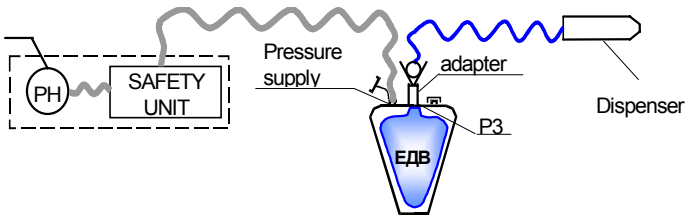
◅ the presence of rubber gasket on cover
Cover with collapsed soft container → housing
Secure cover with swing bolts (six) (tighten them in criss-cross pattern)

Shroud and screws removed from cover → discard

2.2.3. POTABLE WATER CONSUMPTION

(00:05:00)

Configure equipment:



Individual mouthpiece →|← dispenser mouthpiece adapter

Safety unit handle → ОТКР (Open)
Dispenser coupling → arrow direction until white triangle is aligned with red dot
Perform 2-3 pumping cycles using manual pump
Drink water, holding dispenser pushbutton pressed

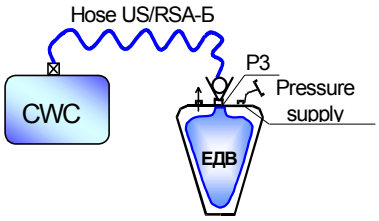
When done drinking:
Dispenser coupling → initial position
Safety unit handle → ЗАКР (Close)

2.2.4. ЕДВ REFILLING FROM CWC

(00:30:00)

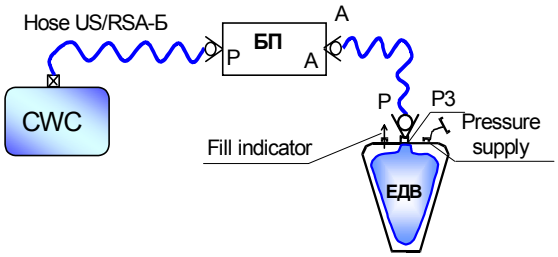
Fill indicator → ЕДВ
Configure equipment per Options 1 or 2

Option 1:



Refill ЕДВ, by squeezing container CWC until red guide mark appears on fill indicator
Disassemble equipment

Option 2: (instead of hose [A-P] hose А-Б may be used)



ИКР
- PNL PWR
- PUMP UNIT

БП
- Refill ЕДВ until red guide mark appears on fill indicator (≈ 30 min)

БП
ИКР
- PUMP UNIT
- PNL PWR

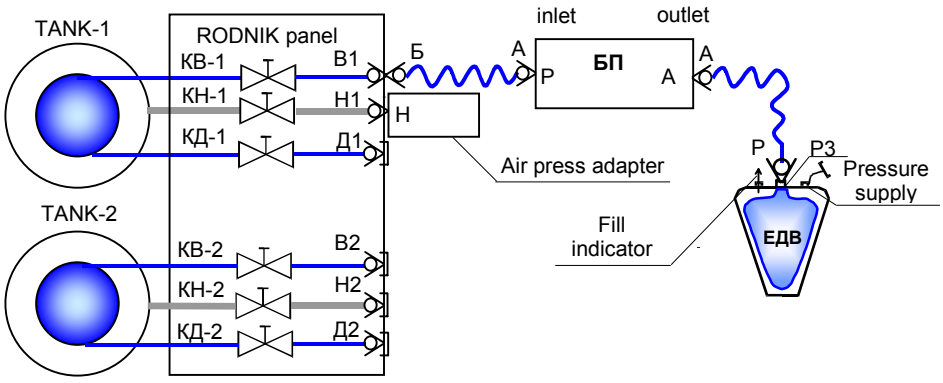
Disassemble equipment

2.3. RODNIK SYSTEM

2.3.1. ЕДВ FILLING USING PUMP UNIT

(01:00:00)

Configure equipment:



ИКР ⏻ PNL PWR

pnl RODNIK H2O VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) H2O

pnl RODNIK AIR PRESS VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) AIR PRESS

⏻ PUMP UNIT
БП ⏻
Fill ЕДВ until red guide mark appears on fill indicator (≈ 30 min)

БП ⏻
ИКР ⏻ PUMP UNIT

pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O

pnl RODNIK AIR PRESS VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) AIR PRESS

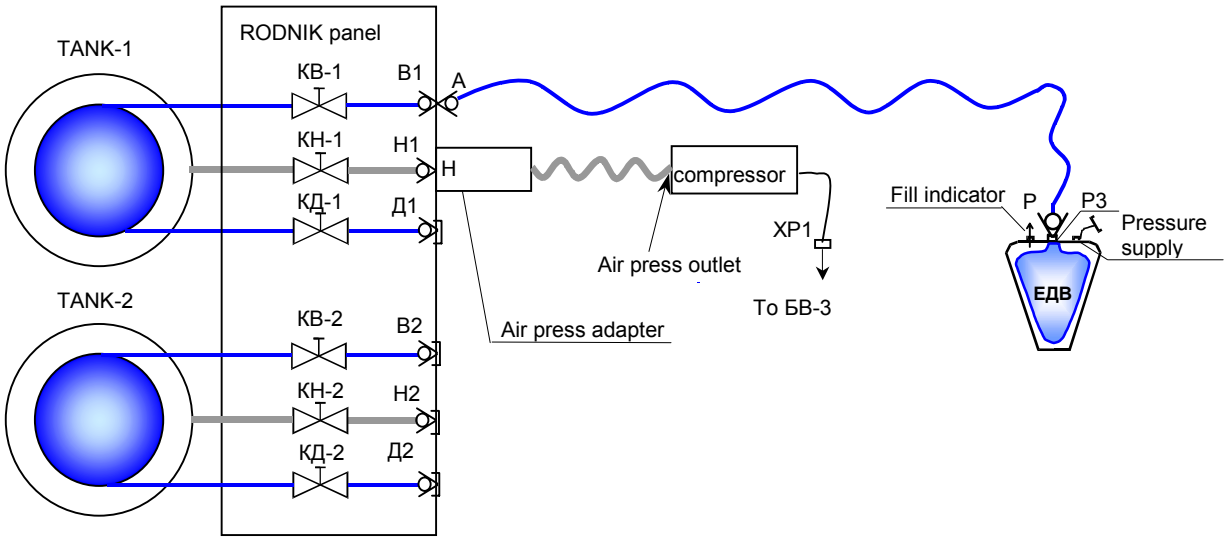
⏻ PNL PWR
Disassemble equipment

2.3.2. ЕДВ REFILLING BY EXPELLING WATER FROM RODNIK SYSTEM TANKS

(00:40:00)

Perform refilling **on MCC-M GO** (if it is impossible to use pump unit)

Configure equipment:



√ compressor →|← БВ-3 outlet

БВ-3 ⏻

ИКР ⏻ PNL PWR

pnl RODNIK AIR PRESS VALVE 1(2) → OPEN

ИКР ☐ LED TANK-1(2) AIR PRESS

Compressor sw PRESSURE → 0.5

⭳ ON (press and hold for 2-3 sec)

pnl RODNIK H2O VALVE 1(2) → OPEN

ИКР ☐ LED TANK-1(2) H2O

◅◅ ЕДВ is full (using fill indicator)

Compressor ⭳ OFF

pnl RODNIK H2O VALVE 1(2) → CLOSE

ИКР ■ LED TANK-1(2) H2O

AIR PRESS VALVE 1(2) → CLOSE

■ LED TANK-1(2) AIR PRESS

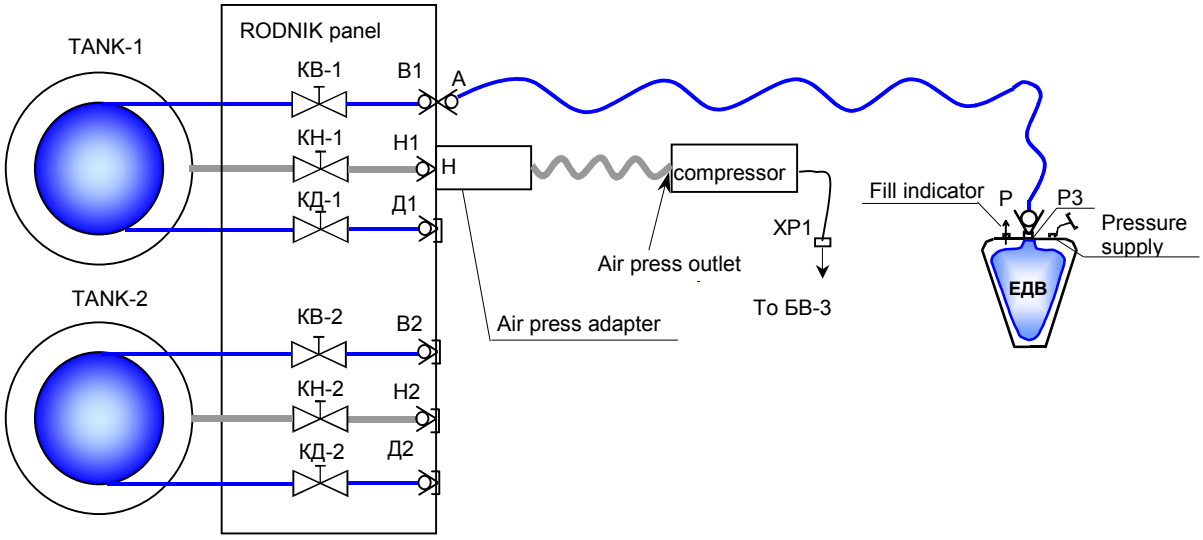
⏻ PNL PWR

Disassemble equipment

2.3.3. COMPRESSION OF RODNIK TANK SHELLS

(01:30:00)

1. Configure equipment (use hose [А-Р] or А-Б)



2. √ compressor →|← БВ-3 outlet

БВ-3	⏻
ИКР	⏻ PNL PWR
pnl RODNIK	AIR PRESS VALVE 1(2) → OPEN
ИКР	□ LED TANK-1(2) AIR PRESS
Compressor	sw PRESSURE → 0.5
	↓ ON (press and hold for 2-3 sec)
	When compressor is deactivated:
pnl RODNIK	H2O VALVE 1(2) → OPEN
ИКР	□ LED TANK-1(2) H2O
	◄◄ ЕДВ is full (using fill indicator)
	If ЕДВ is full, and water continues to flow from tank, then:
pnl RODNIK	H2O VALVE 1(2) → CLOSE
ИКР	■ LED TANK-1(2) H2O
	Replace ЕДВ with empty one
pnl RODNIK	H2O VALVE 1(2) → OPEN
ИКР	□ LED TANK-1(2) H2O
	◄◄ ЕДВ is full

3. Fluid does not flow in hose [A-P]:

pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O
Hose [A-P] ↤↦ cnctr B1(2) and ЕДВ
Adapter →|← dispenser and cnctr B1(2) on RODNIK panel

When compressor is deactivated:

pnl RODNIK H2O VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) H2O
Insert dispenser into packet with towels
↓ and hold pb on dispenser until air-out from dispenser stops

Release pb on dispenser

Compressor ↓ OFF
pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O

4. PNL PWR
Disassemble equipment, but:
do not disconnect air press adapter from cnctr AIR1(2);
do not close AIR PRESS VALVE 1(2)

After 4-5 hours:

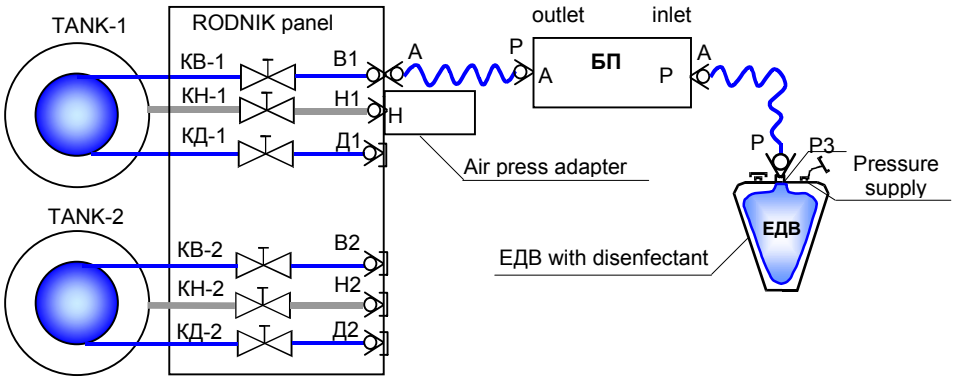
5. **On MCC-M GO**

ИКР PNL PWR
pnl RODNIK AIR PRESS VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) AIR PRESS
PNL PWR
Air press adapter ↤↦ cnctr AIR1(2) on RODNIK panel

2.3.4. RODNIK TANKS DISENFECTANT FILLING

(00:40:00)

1. Configure equipment:



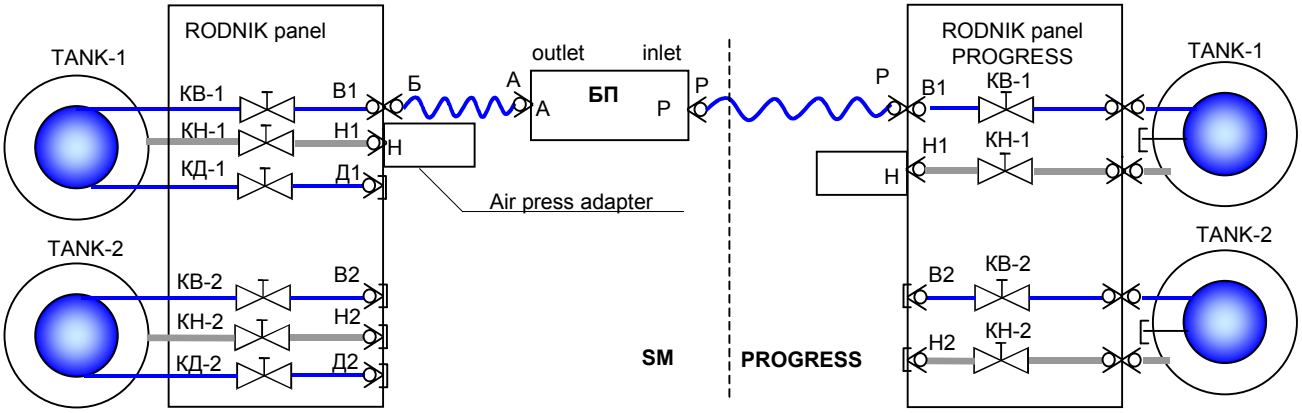
ИКР 2. √ PNL PWR
pnl RODNIK AIR PRESS VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) AIR PRESS
pnl RODNIK H2O VALVE1(2) → OPEN
ИКР □ LED TANK-1(2) H2O
PUMP UNIT
БП
◅◅ fluid flowing from ЕДВ into tank TANK 1(2) (≈ 30 min)

3. When fluid flow stops:

БП
ИКР — PUMP UNIT
pnl RODNIK — AIR PRESS VALVE 1(2) → CLOSE
ИКР — ■ LED TANK-1(2) AIR PRESS
H2O VALVE 1(2) → CLOSE
■ LED TANK-1(2) H2O
PNL PWR
Disassemble equipment

2.3.5. SM RODNIK TANKS FILLING FROM PROGRESS RODNIK TANKS

1. Configure equipment:



In PROGRESS:

pnl RODNIK — 2. AIR PRESS VALVE 1(2) → OPEN
ИКР — PNL PWR
□ LED TANK-1(2) AIR PRESS
pnl RODNIK — H2O VALVE 1(2) → OPEN
ИКР — □ LED TANK-1(2) H2O

In SM:

ИКР — 3. PNL PWR
PUMP UNIT

pnl RODNIK — AIR PRESS VALVE 1(2) → OPEN
ИКР — □ LED TANK-1(2) H2O
pnl RODNIK — H2O VALVE 1(2) → OPEN
ИКР — □ LED TANK-1(2) H2O
БП
water is pumped (until air bubbles stop moving inside the hoses)

БП — 4.
pnl RODNIK — H2O VALVE 1(2) → CLOSE
ИКР — ■ LED TANK-1(2) H2O
AIR PRESS VALVE 1(2) → CLOSE
■ LED TANK-1(2) AIR PRESS
ИКР — PUMP UNIT
PNL PWR

In PROGRESS:

pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O
AIR PRESS VALVE 1(2) → CLOSE
■ LED TANK-1(2) AIR PRESS
PNL PWR

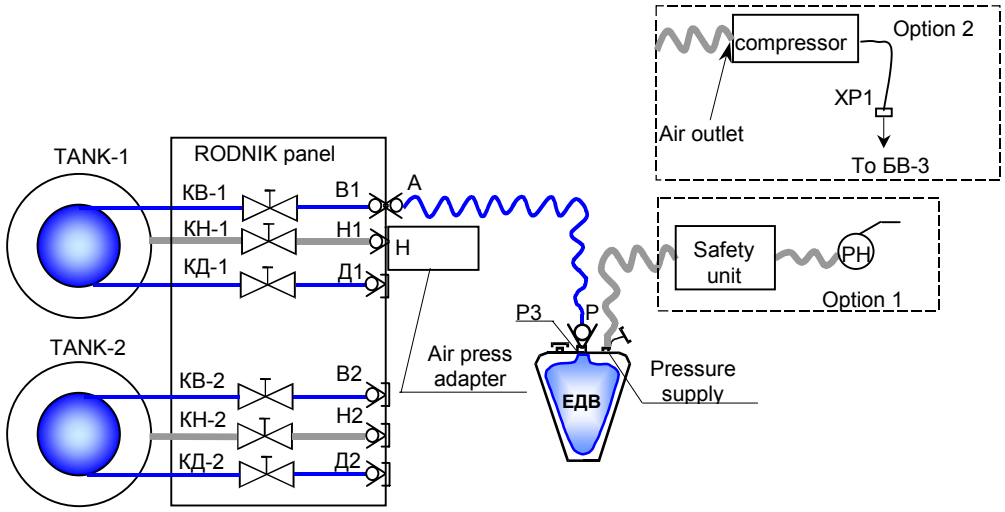
Disassemble equipment

2.3.6. RODNIK TANK FILLING FROM ЕДВ

(01:00:00)

Option 1:

1. WORKING MANUAL PUMP
Configure equipment:



ИКР PNL PWR

pnl RODNIK AIR PRESS VALVE 1(2) → OPEN
□ LED TANK-1(2) AIR PRESS
pnl RODNIK H2O VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) H2O
Pump water, by working manual pump at rate of 30 --- 40 cycles per min
(until air bubbles stop moving inside the hoses)

pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O
AIR PRESS VALVE 1(2) → CLOSE
■ LED TANK-1(2) AIR PRESS
PNL PWR
Disassemble equipment

Option 2:

2. WORKING COMPRESSOR
Configure equipment (option 2):
√ compressor →|← БВ-3 outlet

БВ-3 ⏻
ИКР ⏻ PNL PWR

pnl RODNIK AIR PRESS VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) AIR PRESS

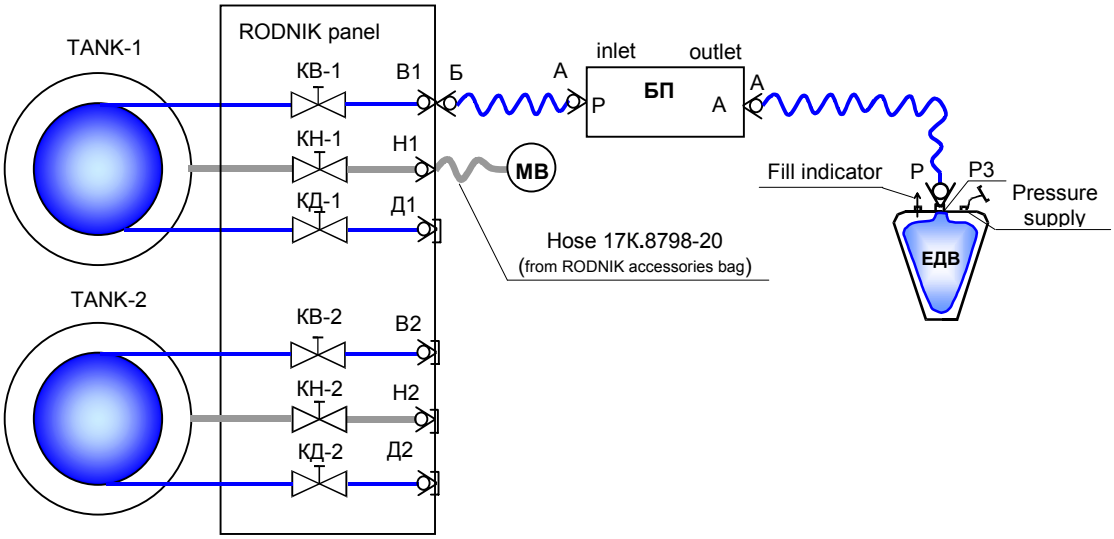
Compressor sw PRESSURE → 0.5
↓ ON (hold for 2-3 sec)

pnl RODNIK H2O VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) H2O

After liquid stops moving:
pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O
AIR PRESS VALVE 1(2) → CLOSE
■ LED TANK-1(2) AIR PRESS
⏻ PNL PWR
Disassemble equipment

2.3.7. DETERMINATION OF WATER AMOUNT IN RODNIK TANK

1. Configure equipment (using empty ЕДВ):



ИКР 2. ⏻ PNL PWR
pnl RODNIK AIR PRESS VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) AIR PRESS
◅ Po (MB) = _____

ИКР 3. PUMP UNIT
БП
pnl RODNIK H2O VALVE 1(2) → OPEN
ИКР □ LED TANK-1(2) H2O
◁◁ ЕДВ is full (until air bubbles stop moving inside the hoses)
БП
pnl RODNIK H2O VALVE 1(2) → CLOSE
ИКР ■ LED TANK-1(2) H2O

4. If ЕДВ is completely full, but water continues flowing:
   replace full ЕДВ with empty
   Perform step 3.

5. ◁ P_1 (MB) = _____
AIR PRESS VALVE 1(2) → CLOSE
■ LED TANK-1(2) AIR PRESS
ИКР PUMP UNIT
PNL PWR

Report to MCC-M values of Po, P_1 and water amount of filled ЕДВ
Disassemble equipment

3. FOOD SUPPLY SUBSYSTEM

CAUTION

Do not use food:
- after expiration date
- when cans and tubes are bulging
- when there is corrosion and food leakage on packaging
- when packaging is damaged
- when mold appears while opening food
- from cans with popped lids

At first breakfast and at lunch take 1 tablet of Aerovit multivitamin

NOTE

1. Food containers with:
   odd numbers contain Russian food items (meals 1 and 3)
   even numbers contain U.S. food items (meals 2 and 4)
2. To avoid inadvertent spillage, do not fill food waste bag up

3.1. RUSSIAN ELECTRICAL FOOD WARMER (ЭПП) OPERATION

(00:30:00)

ЭПП √ □ POWER
Open electrical food warmer cover
Food items → cells

NOTE

1. Food can be heated only once
2. Remove bread packages from plastic wrapper
3. Place bread packages and small cans at bottom
4. Stow cans with edge toward moveable heating element
5. Cover the piercing site with sterile gauze wipes, to avoid food spillage when opening cans

Close cover until secured

00:00:00 ↓ ON □ HEATING

00:30:00 □ READY
■ HEATING
↓ OFF ■ READY
Remove food

3.2. U.S. FOOD WARMER

БВП-10 √
Secure food packages on heating plate under clamping springs
Close cover and lock latches
√ pb 10A (circuit breaker) is depressed

On food warmer:
00:00:00 POWER → ON □ POWER
:30: ---:45: POWER → OFF ■ POWER

CAUTION
When touching heating plate, use finger slots (plate temperature can be > 82°C)

Remove food (if necessary continue heating)

After meals:
Clean surface of heating plate or inserts with dry wipes

3.3. FOOD WASTE BAG REPLACEMENT

(00:10:00)

Loosen fastening screws
Remove rubber valve with bag from installation location by pulling handles
Untie cord and remove bag from installation location
Tie filled bag with cord, wind with harness and → discard
New bag → valve, tie cord
Valve with bag → installation location
Tighten fastening screws

3.4. CRUMB BAG REPLACEMENT

(00:10:00)

Loosen fastening screws
Remove grille from installation location
Remove bag from fastening hooks and → discard
New bag → hooks
Grille → installation location
Tighten fastening screws

3.5. FOOD RATION CONTAINER STOWAGE

(00:10:00)

Remove cover from container
Remove metal pins (four) from vertical hooks
Stow short side panels onto container bottom
Insert pins into horizontal hooks
Stow long side panels onto container bottom
Cover → panels
Fasten bottom with cover in two places with adhesive tape or rubber band

4. HYGIENE SANITARY EQUIPMENT (СГО)

4.1. АСУ (TOILET)

4.1.1. АСУ SCHEMATIC

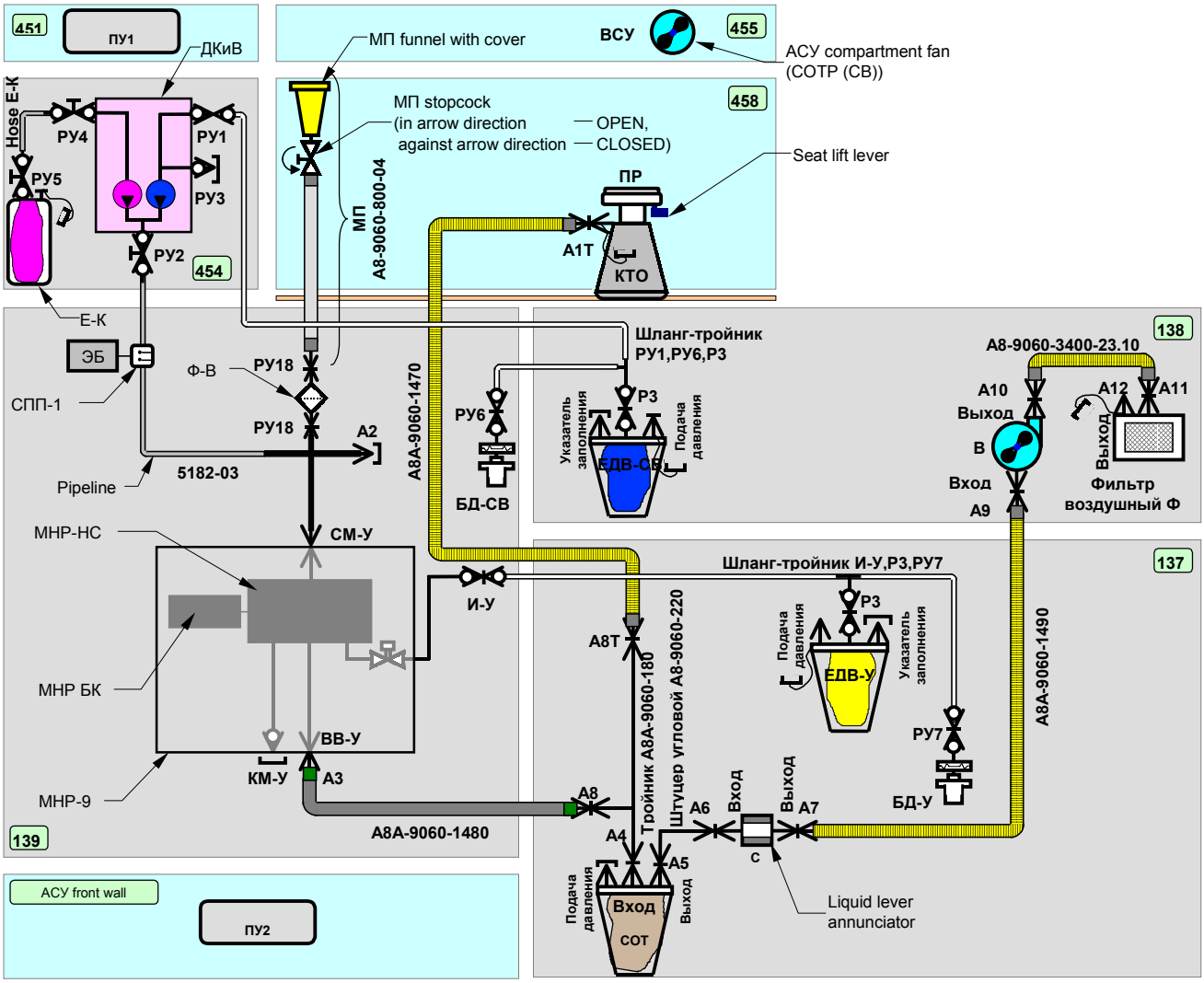


Figure 4.1.1 АСУ Pneumohydraulic Schematic

LEGEND

Bayonet connector	139 Panel number
Connector	Hose E-K Labels of units
Connectors with control knob	ДКиВ Explanatory text
On panel	Behind panel

4.1.2. АСУ OPERATION

1. АСУ operating modes:
   - use after 6 min passed from previous flush or
   - 2-3 flushes in a row (with <6 min interval) requires 30 min delay before next use
2. When urine receptacle stopcock is open:

ПУ2	□ BLOWER POWER
behind 137	□ LED (green) (wring collector indicator)

   After urine receptacle stopcock is closed:

ПУ2	■ BLOWER POWER

3. If red LEDs on ПУ1 are lit, do not activate АСУ
4. Do not discard foreign objects and liquids through urine receptacle
5. При ПУ1 MANUAL автоматическая работа АСУ не обеспечивается

4.1.3. АСУ ACTIVATION

ППС-23	TOILET
ПУ1	PANEL PWR
	√ PRETRT DOSE — 2
	√ MANUAL
	SHOW STATUS LIGHTS (hold while monitoring)
	□ LED UR COLLECT SYS
ПУ2	AUTO
	√ MANUAL

4.1.4. АСУ DEACTIVATION

ПУ1	■ LEDs (all)
	PANEL PWR
ПУ2	AUTO
ППС-23	TOILET

Step	Operation	URINATION	DEFECATION AND URINATION
1	АСУ setup	√ АСУ is activated МП Remove from temp stowage location, and remove cover Stopcock → OPEN ПУ1 ◅ □ LED SEP NORMAL, ◨ LED PRETRT МП there is air suction ********* Perform per Sect. 4.1.10.6, p. **Ошибка! Закладка не определена.**	
2	Use	Use urine receptacle 00.00.00 After use: 00:00:30 МП Stopcock → CLOSED Wipe funnel with toilet wipe Discard used wipe into bag Reinstall urine receptacle ПУ1 ◅ ■ LED SEP NORMAL (≤ 23 sec after urine receptacle stopcock is closed) МП Reinstall cover Prior to sleep discard bag with used wipes into trash container	ПР Receptacle Open cover √ АСУ hygienic insert is installed Use urine receptacle (if necessary) After use: МП Reinstall urine receptacle (if it was used) Discard АСУ insert into solid waste container (pulling by the red strap) Unpack new hygienic insert (from package behind pnl 458) ПР Close cover МП Stopcock → CLOSED ПУ1 ◅ ■ LED SEP NORMAL (≤ 23 sec after urine receptacle stopcock is closed) МП Reinstall cover
3	АСУ setup for the next use	ПУ1 ◅ ■ LEDs (all) ********** ********** If ◅ □ LED FLUSH H2O TK EMPTY Perform per Sect. п **Ошибка! Источник ссылки не найден.**, p. **Ошибка! Закладка не определена.** If ◅ □ LED LIQUID CARRYOVER Perform per Sect. 4.1.10.5, p. **Ошибка! Закладка не определена.** If ◅ □ LED CHECK SEP Perform per Sect. 4.1.10.4, p.**Ошибка! Закладка не определена.** If ◅ □ LED CHECK SEP and □ LED UR TK FULL Perform per Sect. 4.1.10.3, p. **Ошибка! Закладка не определена.** If ◅ □ LED CHECK PRETRT Perform per Sect. 4.1.10.1, p. **Ошибка!**	

4.1.6. АСУ MAINTENANCE

АСУ unit name	Unit serial number	Service life of 1 pc
ЕДВ-СВ	11Ф615.8711-ОА15-1	When emptied 60 --- 70 person-day
ЕДВ-У	11Ф615.8711-ОА15-1	When filled 12 --- 15 person-day
КТО	11Ф615.8720А55-0	20 person-day
Ф-В	5514	90 person-day
PARTICLE AIR FILTER	A8-9060-250-01	When unpleasant odor appears

4.1.6.1. SOLID WASTE CONTAINER ([КТО]) REPLACEMENT

(After 20 person-day, 00:40:00)

Prepare screwdriver M10 L= 30 (cm)

1. <u>USED SOLID WASTE CONTAINER DISASSEMBLY</u>

АСУ
- Loosen swing wingnuts (two) on receptacle
- Remove receptacle from solid waste container
- Close solid waste container cover
- Tighten swing wingnuts (two)
- hose A8A-9060-1470 ←|→ fitting on solid waste container housing
- cap (on nylon string) →|← fitting on solid waste container housing
- Loosen solid waste container fastening screws (two) on frame
  (during the first replacement loosen screws (three))
- Remove full solid waste container and discard (√ **МСС-М** for location)

2. <u>NEW SOLID WASTE CONTAINER ([КТО]) INSTALLATION</u>

- If there are no assembled solid waste containers
  perform 4.1.6.2

АСУ
- Install solid waste container (from ЗИП in ПрК) into the system
  ([КТО] cover is open towards panel 458)
- Secure [КТО] with screws (two) on the frame (screwdriver)
  (do not install the third screw near panel 458)
- hose A8A-9060-1470 cnctr →|← fitting on solid waste container housing
- Open cover (with swing wingnuts (two))
- Install receptacle on solid waste container (cover should swivel towards panel 458)
- Secure receptacle with swing wingnuts (two)

4.1.6.2. SOLID WASTE CONTAINER [КТО] ASSEMBLY

ПрК
- Unstow [КТО] housing and bottom
- Inspect interface seal, remove all foreign objects
- Bottom →|← housing
- Fasten swing bolts (six) in sequence «every other»
  (10 mm torque wrench, 25±2.5 kgf∗cm)

[КТО] housing
- Manually check that the two swing bolts on the cover are tightened to stop

4.1.6.3. FLUSH WATER TANK (ЕДВ-СВ) FILLING

(00:40:00)

Prepare: hose US/RSA-B (from RODNIK)
behind 138 cnctr P3 (hose between ЕДВ-СВ and ДкиВ) ←|→ cnctr P3 (on ЕДВ-СВ)
Fill up ЕДВ-СВ with water from CWC container (see 2.2.4, option 1)
cnctr P3 (hose between ЕДВ-СВ and ДкиВ) →|← cnctr P3 (on ЕДВ-СВ)
ПУ1 MANUAL
ELECTRIC RESET ■ LED FLUSH H2O TK EMPTY
MANUAL
During next flush:
■ LED FLUSH H2O TK EMPTY

4.1.6.4. URINE COLLECTION TANK (ЕДВ-У) REPLACEMENT

(00:40:00)

Prepare: 10 mm Allen wrench,
14 mm wrench, screwdriver M TBD L=TBD (only during the first replacement)
ПрК Unstow empty ЕДВ-У from ЗИП (on straps)
behind 137 cap (on used ЕДВ-У) →|← fitting ПОДАЧА ДАВЛЕНИЯ (pressure feed)
cnctr P3 (ШЛАНГ-ТРОЙНИК И-У,Р3,РУ7(hose-tee)) ←|→ cnctr P3 (on used ЕДВ-У)
cap (on ЕДВ-У from ЗИП) ←|→ cnctr P3
→|← cnctr P3 (on used ЕДВ-У)
During the first replacement:
used ЕДВ-У | Loosen lower bracket fastening bolts (four) on the basket (screwdriver)
| Unscrew upper bracket fastening bolts (four) on ЕДВ-У (use14 mm wrench)
| Turn four brackets to release ЕДВ-У housing (≈ 90 degrees)
During next replacements:
| Release ЕДВ-У restraints
| Remove full ЕДВ-У
ЕДВ-У (from ЗИП) Reinstall cover on housing
Secure swing bolts (six) (10 mm Allen wrench)
Install empty ЕДВ-У
Secure in the basket using available means
cnctr P3 (ШЛАНГ-ТРОЙНИК И-У,Р3,РУ7 (hose-tee)) →|← cnctr P3
cap ←|→ fitting ПОДАЧА ДАВЛЕНИЯ (pressure feed)
Discard full ЕДВ-У
ПУ1 MANUAL
ELECTRIC RESET ■ LED UR TK FULL
MANUAL
During next flush:
| ■ LED UR TK FULL

4.1.6.5. INSERT FILTER (Ф-В) REPLACEMENT

(If air suction through urine receptacle is weak, 00:20:00)

Prepare new insert filter
Lubricate insert filter rubber ring and felt washer with lubricant ЦИАТИМ-221
behind 139 cnctr РУ18 (hose A8-9060-800-04 (urine receptacle)) ←|→ cnctr РУ18 (on used Ф-В)
cnctr РУ18 (on used insert filter) ←|→ cnctr РУ18 (on pipeline 5182-03)
Remove caps (two) from new insert filter and install on used insert filter
cnctr РУ18 (hose A8-9060-800-04 (urine receptacle)) →|← cnctr РУ18 (on new Ф-В)
cnctr РУ18 (on new insert filter) →|← cnctr РУ18 (on pipeline 5182-03)
Discard used insert filter

4.1.6.6. AIR FILTER (Ф) REPLACEMENT

(If unpleasant odor appears, 00:20:00)

Unstow new ФИЛЬТР ВОЗДУШНЫЙ (air filter) from ЗИП, screwdriver М6 L=TBD
behind 138 cnctr A11 (hose A8-9060-3400-23.10) ←|→ cnctr A11 (on used Ф)
Loosen screws (four) with washers
Remove used air filter
Remove caps (two) from new air filter and install on used air filter
Reinstall new air filter
Secure with screws (four) and washers
cnctr A11 (hose A8-9060-3400-23.10) →|← cnctr A11 (on new air filter)
Discard used air filter (location - **on MCC-M GO**)

4.1.7. АСУ ACTIVATION AFTER UNIT REPLACEMENT AND BREAK IN OPERATION

After break in operation or replacement: • **pretreat container (Е-К)+Е-К hose,** • **pretreat container hose,** • **pretreat and water dispenser (ДкиВ),** • **ДКиВ + Е-К + Е-К hose**	**After air-water separator (МНР-НС) replacement**
ППС-23 ⏻ TOILET (after break in operation) ПУ1 ⏻ PANEL PWR √ ⏻ PRETRT DOSE — 2 ↓ SHOW STATUS LIGHTS (hold while monitoring) ◅ □ LED UR COLLECT SYS ↓ H/W MATE CK (hold while monitoring) ◅ □ LED H/W MATE CK After break in operation: ↓ LAMP TEST (hold while monitoring) ◅ LEDs all (except LED UR COLLECT SYS) ПУ2 ⏻ AUTO √ ⏻ MANUAL (after break in operation) ПУ1 ⏻ MANUAL	
	⏻ DRY SEP OVRD
МП Remove from temp stowage location, remove cover Stopcock → OPEN ПУ1 ↓ SEP ON □ LED SEP NORMAL ◨ LED PRETRT ✋ there is air suction	
□ LED PRETRT pH↑	
↓ PRETRT ON ◨ LED PRETRT Repeat N times with 20 sec breakк	
During replacement: • Е-К + Е-К hose, Е-К hose N = 6 • ДКиВ N = 8 • ДКиВ + Е-К + Е-К hose N = 14 After break in operation N = 14 ↓ ELECTRIC RESET ■ LED PRETRT pH↑	N = 3
After 30 sec: МП Stopcock → CLOSED ПУ1 ◅ ■ LED SEP NORMAL (after ≤ 23 sec)	
	⏻ DRY SEP OVRD
⏻ MANUAL	
Functional check: МП Stopcock → OPEN ПУ1 ◅ □ LED SEP NORMAL, ◨ LED PRETRT МП ✋ there is air suction After 30 sec: Stopcock → CLOSED Reinstall urine receptacle ПУ1 ◅ ■ LED SEP NORMAL (after ≤ 23 sec) МП Reinstall cover	

4.1.8. АСУ SETUP FOR BREAK IN OPERATION)

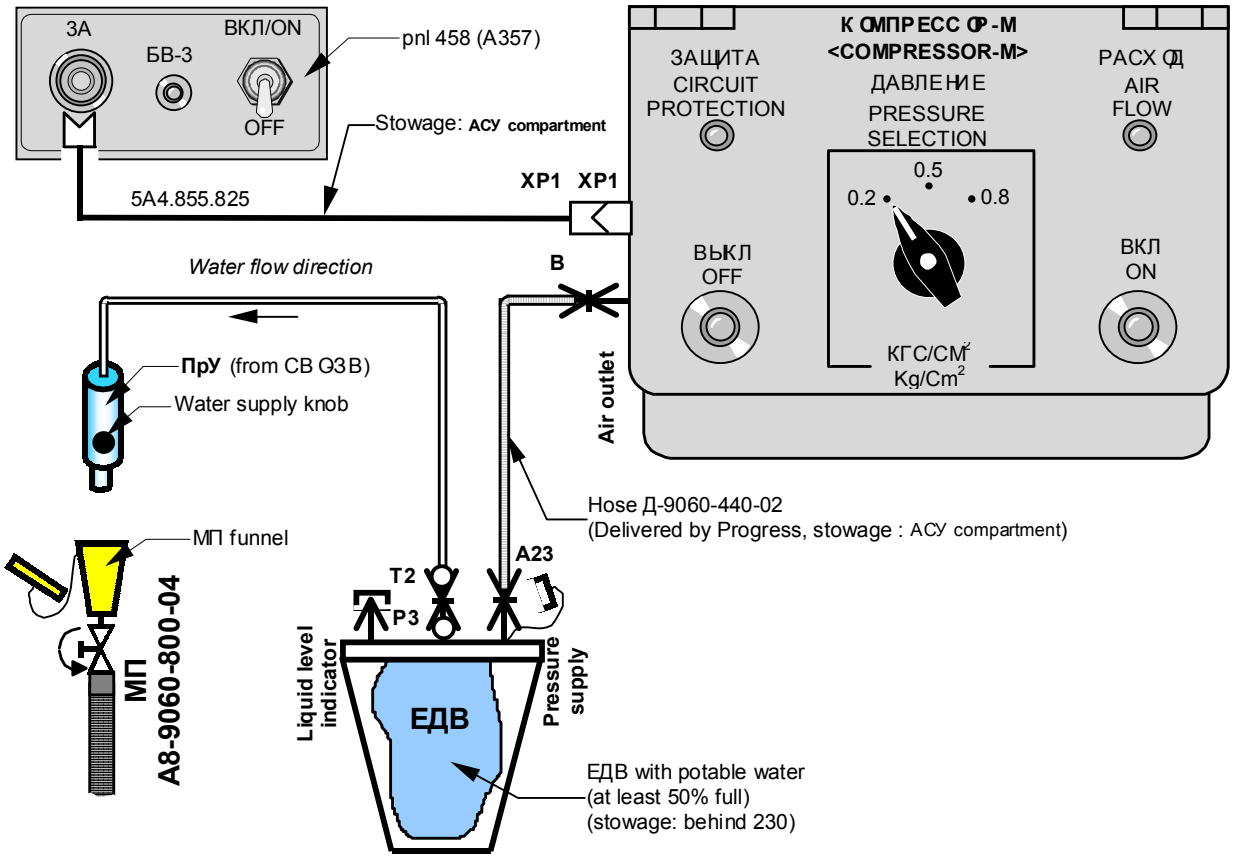
(more than 10 days)

1. HARDWARE INSTALLATION

Setup:

СВО-3В dispenser,
230 ЕДВ with potable water (at least 50% full)
АСУ hose Д-9060-440-02, cbl 5А4.855.825
Remove caps and covers from these units

ЕДВ cap ←|→ fitting ПОДАЧА ДАВЛЕНИЯ (pressure feed)
Configure equipment



2. АСУ FLUSHING

458, БВ-3 ⏻
Compressor-M sw PRESSURE SELECTOR → 0.2

↓ ON (hold for 2-3 sec) □ LED AIR FLOW (above pb ON)
◅ ▌ LED CIRCUIT PROTECTION
If □ LED CIRCUIT PROTECTION
↓ OFF
↓ ON (hold for 2-3 sec)
◅ ■ LED CIRCUIT PROTECTION

****
****
↓ OFF
√ **МСС-М**
****

👂 compressor-M is operating

NOTE
When set pressure is reached compressor-M is shutdown automatically

◅ ▌ LED AIR FLOW (in 2 min after compressor-M automatic shutdown)
МП Remove from temp stowage location, remove cover
Stopcock → OPEN
◅ □ LED SEP NORMAL, ◨ LED PRETRT
✋ there is air suction
ПрУ Insert dispenser fitting into urine receptacle funnel
↓ buttom and hold for 30 sec (flush ~ 500 ml)
МП Stopcock → CLOSED
ПУ1 ◅ ▌ LED SEP NORMAL
After 1 min:
Repeat two-three times
Reinstall cover and urine receptacle
458, БВ-3 ⏻

3. CLOSEOUT OPERATIONS

Deactivate АСУ (see 4.1.4, p. 4—2)
Disassemble equipment
Install caps and covers
ЕДВ caps →|← fitting ПОДАЧА ДАВЛЕНИЯ (pressure feed)
Stow all units
454 Control knobs of cnctr РУ2,РУ4 (ДКиВ) → 3 (closed)
Control knob of cnctr РУ5 (Е-К) → 3 (closed)
[КТО] Unscrew swing wingnuts (two) on receptacle
Remove receptacle from solid waste container and secure in АСУ compartment using available means
Close solid waste container
Tighten swing wingnuts (two)
Disassemble solid waste container and **on МСС-М GO** discard

4.1.9. АСУ HARDWARE SETUP AFTER BREAK IN OPERATION

[КТО] Loosen swing wingnuts (two) (on cover)
Open cover
Unsecure receptacle and install on solid waste container
Secure receptacle on solid waste container with swing wingnuts (two)

CAUTION
Pretreat and water dispenser failure is possible when: РУ2, РУ4, РУ5 couplings are not open or РУ1, РУ6 connection is faulty

behind 454 Control knobs of cnctr РУ2,РУ4 (ДКиВ) → O (open)
Control knob of cnctr РУ5 (Е-К) → O (open)
√ cnctr РУ1 (ШЛАНГ-ТРОЙНИК РУ1,РУ6,Р3 (hose-tee)) →|← pretreat and water dispenser

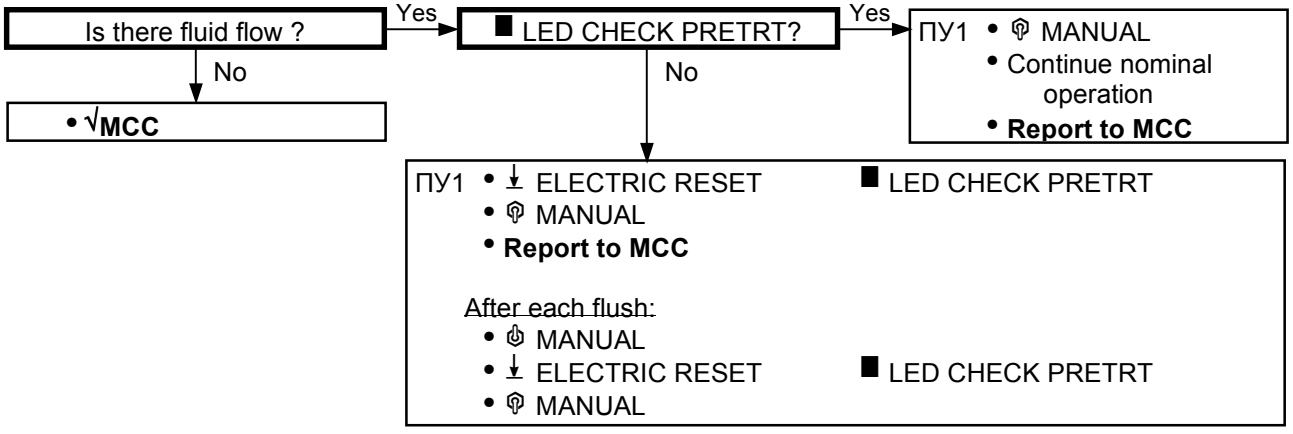
behind 139 √ cnctr РУ6 (ШЛАНГ-ТРОЙНИК РУ1,РУ6,Р3 (hose-tee)) →|← БД-СВ
√ cap is installed on cnctr A2 (pipeline T)

4.1.10. АСУ MALFUNCTION

4.1.10.1. ПУ1 □ LED CHECK PRETRT

ПУ1		□ LED PRETRT pH↑ (possible)
		If □ LED FLUSH H20 TK EMPTY
		| Fill ЕДВ (see 4.1.6.3, p. 4—5)
454	ДКиВ	√ Control knob of cnctr РУ2,РУ4 — O (open)
		√ cnctr РУ1 →|← cnctr РУ1 (ШЛАНГ-ТРОЙНИК РУ1,РУ6,Р3 (hose-tee))
	Е-К	√ Control knob of cnctr РУ5 — O (open)
139	БД-СВ	√ cnctr РУ6 →|← cnctr РУ6 (ШЛАНГ-ТРОЙНИК РУ1,РУ6,Р3 (hose-tee))
ПУ1		PANEL PWR
behind 454		√ cnctr Ш12-ПУ (on pretreat and water dispenser) is mated with cbl 6269.13
ПУ1		PANEL PWR ■ LED CHECK PRETRT
		MANUAL
МП		Remove cover
		Stopcock → OPEN
ПУ1		SEP ON □ LED SEP NORMAL, LED PRETRT
		pretreat and water dispenser activation
		If there are gas bubbles:
		| liquid flow in ШЛАНГ-ТРОЙНИК РУ1,РУ6,Р3 (hose-tee),
		ШЛАНГ (hose) Е-К, pipeline 5182-03 (during □ LED PRETRT)
00:00:00		■ LED SEP NORMAL
ПУ1		■ LED CHECK PRETRT
		If □ LED CHECK PRETRT
		| ELECTRIC RESET ■ LED CHECK PRETRT
00:00:20		PRETRT ON □ LED PRETRT
		Repeat two more times
		After 5 sec:
МП		Stopcock → CLOSED ■ LED SEP NORMAL (after ≤ 23 sec)
		Reinstall cover

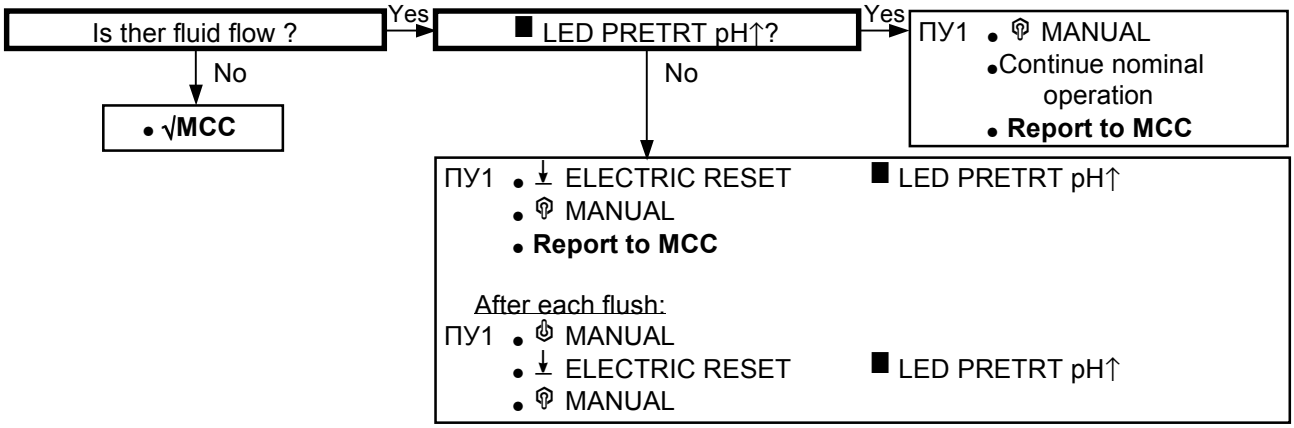
Perform per check results:



4.1.10.2. ПУ1 □ LED PRETRT pH↑

ПУ1	□ LED CHECK PRETRT (possible)
ДКиВ	√ Control knob of cnctr РУ4 — O (open)
Е-К	√ Control knob of cnctr РУ5 — O (open)
	Deactivate АСУ (see 4.1.4, p. 4—2)
behind 451	√ cnctr X7-ПУ (on ПУ1) →|← cbl 6269.17
behind 139	√ cnctr Ш1 (on ЭБ СПП-1) →|← cbl 6269.17
	√ cnctr X1 (on ЭБ СПП-1) →|← cbl on pipeline 5182-03
	Activate АСУ (see **Ошибка! Источник ссылки не найден.**, p. **Ошибка! Закладка не определена.**)■ LED PRETRT pH↑
ПУ1	⏻ MANUAL
МП	Remove cover
	Urine receptacle stopcock→ OPEN
ПУ1	↓ SEP ON □ LED SEP NORMAL, LED PRETRT
	◁◁ fluid flow in ШЛАНГ Е-К (Е-К hose) (during □ LED PRETRT)
	(if there are air bubbles, their transfer is ≈ 230 mm for one activation)
00:00:00	■ LED PRETRT
	◁ ■ LED PRETRT pH↑
	If □ LED PRETRT pH↑
	| ↓ ELECTRIC RESET ■ LED PRETRT pH↑
00:00:20	↓ PRETRT ON □ LED PRETRT
	Repeat two more times
	After 5 sec:
МП	Stopcock → CLOSED ■ LED SEP NORMAL (after ≤ 23 sec)
	Reinstall cover

Perform per check results:



4.1.10.3. ПУ1 □ LED CHECK SEP AND □ LED UR TK FULL

During the first flush after ЕДВ-У replacement:

behind 137 ЕДВ-У √ cnctr Р3 →|← cnctr Р3 (ШЛАНГ-ТРОЙНИК И-У,Р3,РУ7(hose-tee))

In other cases:

Replace ЕДВ-У (see 4.1.6.4, p. 4—5)

Liquid drain from air-water separator:

ПУ1 MANUAL
ELECTRIC RESET ■ LED CHECK SEP ■ LED UR TK FULL
MANUAL

МП Remove cover

00:00:00 Stopcock → OPEN

00:00:15 ПУ1 □ LED SEP NORMAL, ◨ LED PRETRT
there is air suction

After 5---10 sec:

МП Stopcock → CLOSED ■ LED SEP NORMAL (after ≤ 23 sec)

ПУ1 ■ LED CHECK SEP
■ LED UR TK FULL

Perform per check results:

■ LED CHECK SEP ?
■ LED URINE TK FULL ?
Yes → МП • Install cover • Continue nominal operation • **Report to MCC**

□ LED CHECK SEP ?
□ LED URINE TK FULL ?
Yes

ПУ1 • MANUAL • ELECTRIC RESET ■ LED CHECK SEP ■ LED UR TK FULL • MANUAL

МП • Reinstall cover

Urine drains temp to empty ЕДВ-У (on air-water separator):

behind 137 • cnctr И-У (air-water separator) ↔ cnctr И-У (ШЛАНГ-ТРОЙНИК И-У,Р3,РУ7 (hose-tee))
• Secure ЕДВ-У (from ЗИП) in pnl 138 area
• Remove caps from Р3 and ПОДАЧА ДАВЛЕНИЯ (pressure feed)
• cnctr И-У (air-water separator) →|← cnctr Р3 (on ЕДВ-У)
• Continue operation
• **Report to MCC**

4.1.10.4. ПУ1 □ LED CHECK SEP

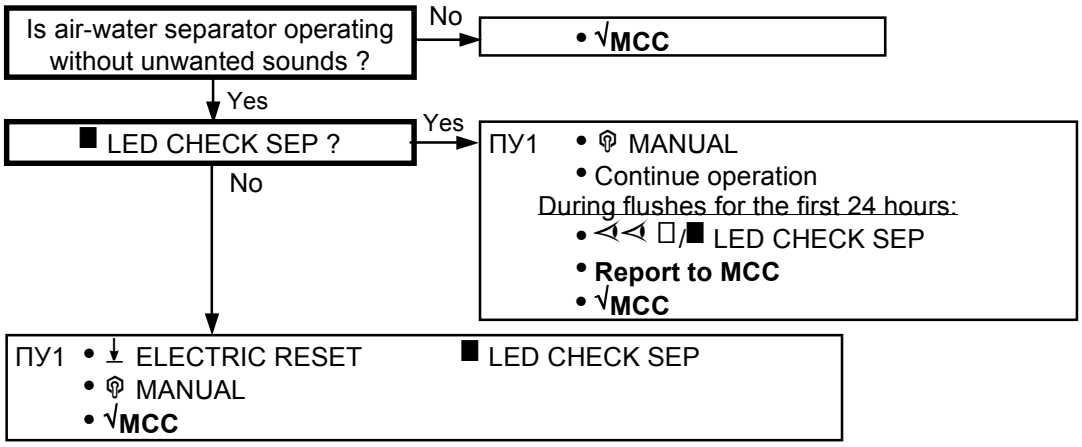
1. EMPTY ЕДВ-У INSTALLATION

behind 137 cnctr И-У (hose ШЛАНГ-ТРОЙНИК И-У,Р3,РУ7(hose-tee)) ↔ cnctr И-У (air-water separator)
Secure ЕДВ-У (from ЗИП) in pnl 138 area
Remove caps from Р3 and ПОДАЧА ДАВЛЕНИЯ (pressure feed)
cnctr И-У (air-water separator) →|← cnctr Р3 (on ЕДВ-У)

2. LIQUID DRAIN FROM AIR-WATER SEPARATOR TO EMPTY ЕДВ-У

ПУ1 MANUAL
ELECTRIC RESET ■ LED CHECK SEP
МП Remove cover
Stopcock → OPEN
00:00:00 ПУ1 SEP ON □ LED SEP NORMAL, ◨ LED PRETRT
there is air suction
Air-water separator is operating, there are no unwanted sounds (creak, grind)
For 40 sec during air-water separator operation:
ПУ1 ◁◁ □ LED SEP NORMAL
◁◁ ■ LED CHECK SEP
МП Stopcock → CLOSED ■ LED SEP NORMAL (after ≤ 23 sec)
ПУ1 ◁ ■ LED CHECK SEP
Reinstall cover

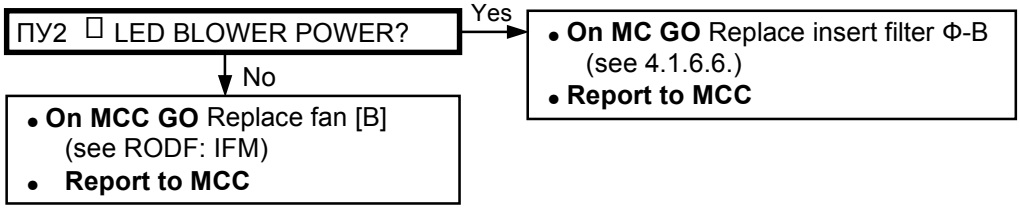
Perform per check results:



4.1.10.5. ПУ1 □ LED LIQUID CARRYOVER

behind 137	
Annunciator	□ LED (red)
	Deactivate АСУ (see 4.1.4, p. 4—2)
	Replace wring collector (see RODF: IFM IVA SM)
	cnctr ВЫХОД (outlet) ←┤├→ cnctr A7 (hose A8A-9060-1490)
	Wipe dry the internal side of the annunciator (from cnctr ВЫХОД (outlet))
	cnctr ВЫХОД (outlet) →┤├← cnctr A7 (hose A8A-9060-1490)
	Activate АСУ (see **Ошибка! Источник ссылки не найден.**, p. **Ошибка! Закладка не определена.**)
МП	Remove cover
	Stopcock → OPEN
Annunciator	↓ pb (on housing) ■ LED (red) □ LED (green)
ПУ1	◁ ■ LED LIQUID CARRYOVER
МП	Stopcock → CLOSED
	Install cover
	Report to MCC-M

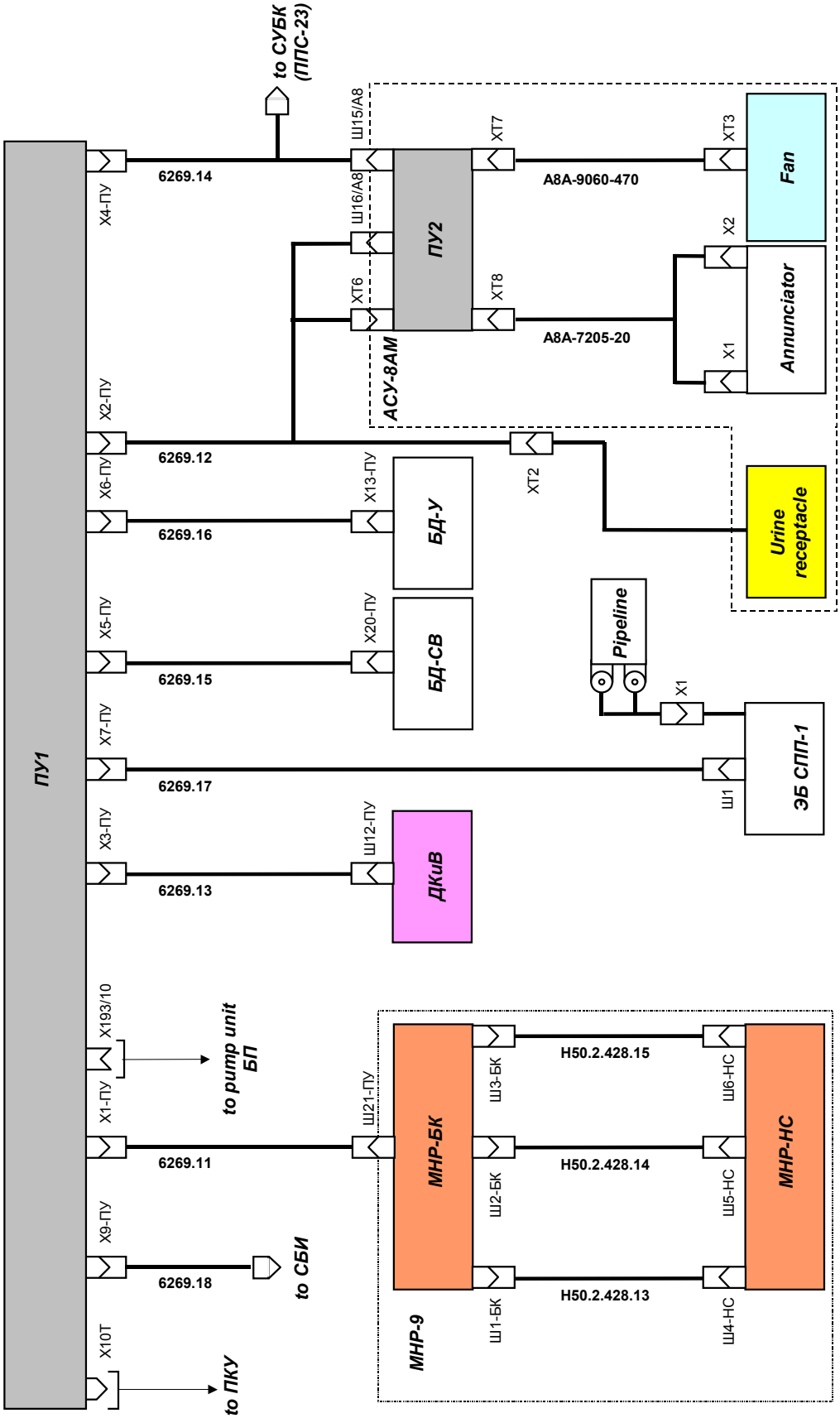
4.1.10.6. WEAK AIR SUCTION THROUGHT URINE RECEPTACLE



4.1.10.7. UNPLEASANT ODOR APPEARANCE

Replace ФИЛЬТР ВОЗДУШНЫЙ (air filter) (see 4.1.6.6, p. 4—6)
Report to MCC-M

4.1.10.8. АСУ ELECTRIC SCHEMATIC



4.2. USE OF TRASH CONTAINER (КБО)

Prepare:
- rigid trash container
- bag with soft trash containers 11Ф615.8715-0А15-01

Loosen swing screws (six) from rigid trash container cover
Remove cover
Remove valve from trash container

Straighten soft trash container insert inside rigid trash container
Turn downward upper part of soft trash container (“petticoat’’)

When trash container is full:
Raise upper part of soft trash container, tighten
rubber harness and → discard

4.3. VACUUM CLEANER ПО-70

Unstow from Accessories Kit ПО-70 ПРИНАДЛЕЖНОСТИ:
- muffler
- hose
- nozzles
- cord 342-3078.04.000 (from Kit ПО-70 ШНУР)

Plug –27V on vacuum cleaner →|← outlet 240Ю=А1-Х27В of cord
Plug 10Ю=РБС-20-Х1 of cord →|← РБС-20
Tip 240Ю-ХТ1 (D-ring) →|← screw  near РБС-20 (for ground)
Hose →|← fitting ВХОД (inlet) of the vacuum cleaner
Nozzle → hose
Screw in muffler on fitting ВЫХОД (outlet)

NOTE

To replace dust collector:
Open vacuum cleaner latches
Remove dust collector along guides

РБС-20
ПО-70

After operation is complete:
ПО-70
РБС-20