

# 737NG液压系统冲洗时的油滤更换范围

海技北分技术支援中心

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本次改版新增针对如下步骤涉及更换的滤子范围进行说明

These are the tasks: [PTU Pressure Filter Element - Removal, TASK 29-22-21-020-801](#), [PTU Pressure Filter Element - Installation, TASK 29-22-21-400-802](#)

SUBTASK 29-11-00-170-002

(4) Inspect the EMDP acoustic filter for metal particle contamination do this task: [Hydraulic Systems A and B Electric Motor-Driven Pump \(EMDP\) Acoustic Filter Cleaning, TASK 29-11-00-100-801](#)

SUBTASK 29-11-00-200-006

(5) Inspect the Hydraulic Systems A and B Return Filter Element for metal particle contamination, do this task: [Hydraulic Systems A and B Return Filter Element - Inspection, TASK 29-11-61-200-801](#)

SUBTASK 29-11-00-860-016

**WARNING: MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL THE HYDRAULIC COMPONENTS WHEN POWER IS ON. THESE COMPONENTS CAN MOVE SUDDENLY.**

在依据AMM 29-11-00-170-801执行飞机液压油路冲洗时，人员会对油滤更换的范围有疑问，具体体现在如下**四个方面**：

### 1、all the elements的范围

手册general中提到，需要在2-3个月内更换**all the filter elements**，这里“**all the filter elements**”是指哪些油滤？是本次工作已换的受影响油滤还是本次工作涉及系统中所有的油滤（含未更换油滤）？

- (a) Examine the case drain line and hoses for contamination or blockage.
- (b) If contamination or blockage is found, clean or replace the case drain line.
- (c) AIRLINE REVISION: Replace the case drain filter element again, within one week to one month of normal operation.
- (d) AIRLINE REVISION: Replace **all the filter elements** in the system within two months to three months of normal operation.

### 2、filter elements for the applicable pump的范围

进行油路冲洗时，手册要求更换失效泵（mechanical malfunction）对应油路的油滤，哪些油滤属于“for the applicable pump”？例如EMDP mechanical malfunction，是否需要更换EDP壳体油滤以及压力组件中EDP的供压油滤？

- (3) Do these steps to replace the pressure, return, and case drain filter elements that have a relation to the pump with the mechanical malfunction:

**NOTE Do only the steps necessary to replace the filter elements for the applicable pumps.**

- (a) Replace the filter element of the case drain filter module for the Engine Driven Pump (EDP).

These are the tasks: [EDP Case Drain Filter Element Removal, TASK 29-11-51-000-801](#), [EDP Case Drain Filter Element Installation, TASK 29-11-51-400-801](#).

- (b) Replace the filter element of the case drain filter module for the Electric Motor Driven Pump (EMDP).

### 3、EMDP消音器滤子什么时候需要换

手册步骤要求检查EMDP消音器滤子，那么如果只有EDP故障，是否也要检查EMDP消音器的滤子呢？

These are the tasks: [PTU Pressure Filter Element - Removal, TASK 29-22-21-020-801](#), [PTU Pressure Filter Element - Installation, TASK 29-22-21-400-802](#).

SUBTASK 29-11-00-170-002

(4) Inspect the EMDP acoustic filter for metal particle contamination, do this task: [Hydraulic Systems A and B Electric Motor-Driven Pump \(EMDP\) Acoustic Filter Cleaning, TASK 29-11-00-100-801](#).

### 4、只有一个系统油路污染时，是否需要检查另一个系统的滤子？

手册要求检查A\B系统的油滤（手册用了“and”），那么，当只有A系统油路有污染时，是否有必要去同步检查B系统的油滤呢？

(5) Inspect the Hydraulic Systems **A and B** Return Filter Element for metal particle contamination, do this task: [Hydraulic Systems A and B Return Filter Element - Inspection, TASK 29-11-61-200-801](#).

SUBTASK 29-11-00-860-016

下面对以上问题进行明确

 提示

本PPT仅从工卡步骤执行层面对相关疑问进行解释。

因不同的故障现象、故障指向及故障原因可能有所不同，因此，实际排故过程中，需根据具体现象和检查结果综合评估需要对哪些油路和滤子进行检查。

# 问题1、2解答

经过对系统油路进行分析，相关疑问已和厂家沟通明确(厂家答复原文见文末)，具体如下：

## 1、all the elements的范围

“all the filter elements”是指本次油路冲洗工作中已更换的滤子。该步骤的目的是让飞机运行一段时间，再将受影响的滤子换一遍，确保油路干净。

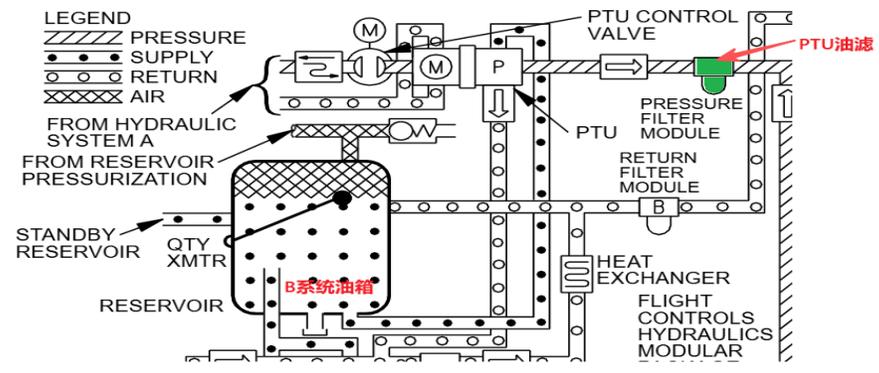
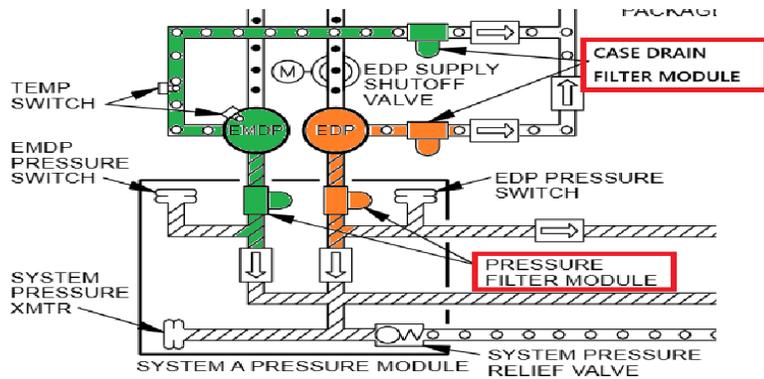
- (a) Examine the case drain line and hoses for contamination or blockage.
- (b) If contamination or blockage is found, clean or replace the case drain line.
- (c) AIRLINE REVISION: Replace the case drain filter element again, within one week to one month of normal operation.
- (d) AIRLINE REVISION: Replace all the filter elements in the system within two months to three months of normal operation.

## 2、filter elements for the applicable pump的范围

仅更换与失效泵相关的滤子：

(1) A/B系统中EDP与EMDP的壳体油滤油路、EDP与EMDP的供油油滤相互独立（如下左图）。即某一个泵故障，不用更换另一路泵对应的滤子。例如，系统中仅EMDP故障，无需更换EDP对应case filter及pressure filter

(2) 仅B系统涉及PTU油滤（如下右图），因此仅执行A系统油路冲洗时，无需更换PTU油滤





## 问题1、2的应用举例

例：当A系统EMDP故障需执行油路冲洗时，步骤（3）涉及的如下油滤需更换（需执行步骤bcd，ae步骤无需执行）

(3) Do these steps to replace the pressure, return, and case drain filter elements that have a relation to the pump with the mechanical malfunction:

**NOTE: Do only the steps necessary to replace the filter elements for the applicable pumps.**

(a) Replace the filter element of the case drain filter module for the Engine Driven Pump (EDP). (无需执行)

These are the tasks: [EDP Case Drain Filter Element Removal, TASK 29-11-51-000-801](#), [EDP Case Drain Filter Element Installation, TASK 29-11-51-400-801](#).

(b) Replace the filter element of the case drain filter module for the Electric Motor-Driven Pump (EMDP).

These are the tasks: [EMDP Case Drain Filter Element Removal, TASK 29-11-41-000-801](#), [EMDP Case Drain Filter Element Installation, TASK 29-11-41-400-801](#).

(c) Replace the filter element of the pressure module. (只换EMDP的滤子)

These are the tasks: [Hydraulic Systems A and B Pressure Module Filter Element Removal, TASK 29-11-71-000-802](#), [Hydraulic Systems A and B Pressure Module Filter Element Installation, TASK 29-11-71-400-802](#).

(d) Replace the filter element of the return module.

These are the tasks: [Return Filter Element Removal, TASK 29-11-61-000-801](#), [Return Filter Element Installation, TASK 29-11-61-400-801](#).

(e) Replace the PTU Pressure Filter Element. (A系统冲洗时无需执行，仅B系统涉及)

These are the tasks: [PTU Pressure Filter Element - Removal, TASK 29-22-21-020-801](#), [PTU Pressure Filter Element - Installation, TASK 29-22-21-400-802](#).

例：当B系统EMDP故障需执行油路冲洗时，步骤（3）涉及的如下油滤需更换（需执行步骤bcde，a步骤无需执行）

(3) Do these steps to replace the pressure, return, and case drain filter elements that have a relation to the pump with the mechanical malfunction:

**NOTE: Do only the steps necessary to replace the filter elements for the applicable pumps.**

(a) Replace the filter element of the case drain filter module for the Engine Driven Pump (EDP). 无需执行

These are the tasks: [EDP Case Drain Filter Element Removal, TASK 29-11-51-000-801](#), [EDP Case Drain Filter Element Installation, TASK 29-11-51-400-801](#).

(b) Replace the filter element of the case drain filter module for the Electric Motor-Driven Pump (EMDP).

These are the tasks: [EMDP Case Drain Filter Element Removal, TASK 29-11-41-000-801](#), [EMDP Case Drain Filter Element Installation, TASK 29-11-41-400-801](#).

(c) Replace the filter element of the pressure module. 只换EMDP的滤子

These are the tasks: [Hydraulic Systems A and B Pressure Module Filter Element Removal, TASK 29-11-71-000-802](#), [Hydraulic Systems A and B Pressure Module Filter Element Installation, TASK 29-11-71-400-802](#).

(d) Replace the filter element of the return module.

These are the tasks: [Return Filter Element Removal, TASK 29-11-61-000-801](#), [Return Filter Element Installation, TASK 29-11-61-400-801](#).

(e) Replace the PTU Pressure Filter Element. B系统涉及，需执行

These are the tasks: [PTU Pressure Filter Element - Removal, TASK 29-22-21-020-801](#), [PTU Pressure Filter Element - Installation, TASK 29-22-21-400-802](#).

## 问题3、4解答

### 3、EMDP消音器滤子什么时候需要换

因EDP和EMDP油路是独立的，因此，只有当EMDP失效时，才需要检查EMDP消音器油滤。而仅EDP失效时，不用检查EMDP消音器油滤。

### 4、只有一个系统油路污染时，是否需要检查另一个系统的滤子？

A\B系统的油路是相互独立的。因此，只有A系统油路污染时，不需要检查B系统油路油滤。同理，只有B系统油路污染时，不需要检查A系统油路油滤。



## 问题3、4的应用举例

例：当A系统EMDP故障需执行油路冲洗时，步骤（4）EMDP消音器油滤需进行检查。

These are the tasks: [PTU Pressure Filter Element - Removal, TASK 29-22-21-020-801](#), [PTU Pressure Filter Element - Installation, TASK 29-22-21-400-802](#).

SUBTASK 29-11-00-170-002

(4) Inspect the EMDP acoustic filter for metal particle contamination, do this task: [Hydraulic Systems A and B Electric Motor-Driven Pump \(EMDP\) Acoustic Filter Cleaning, TASK 29-11-00-100-801](#).

例：当A系统**仅EDP**故障需执行油路冲洗时，因EDP和EMDP油路独立，步骤（4）涉及的EMDP消音器油滤**无需**进行检查。

These are the tasks: [PTU Pressure Filter Element - Removal, TASK 29-22-21-020-801](#), [PTU Pressure Filter Element - Installation, TASK 29-22-21-400-802](#).

SUBTASK 29-11-00-170-002

(4) Inspect the EMDP acoustic filter for metal particle contamination, do this task: [Hydraulic Systems A and B Electric Motor-Driven Pump \(EMDP\) Acoustic Filter Cleaning, TASK 29-11-00-100-801](#).

例：当**仅B**系统需执行油路冲洗时，因A\B系统油路相互独立，执行步骤（5）时，仅检查**B**系统油滤即可，无需检查A系统油滤。

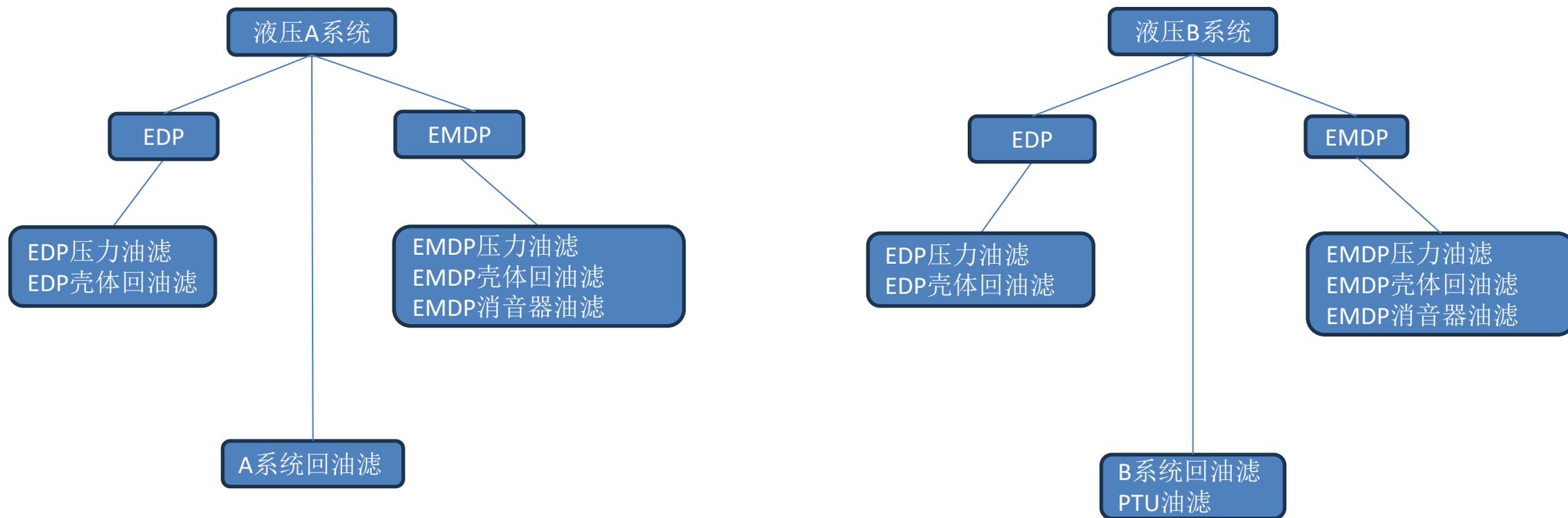
(5) Inspect the Hydraulic Systems **A and B** Return Filter Element for metal particle contamination, do this task: [Hydraulic Systems A and B Return Filter Element - Inspection, TASK 29-11-61-200-801](#).

SUBTASK 29-11-00-860-016

## 小结

油滤更换范围的判断依据可归纳为：**液压A、B系统油路独立、EDP和EMDP油路独立。**

需更换的滤子范围如下简图体现：



## 附厂家答复（针对前述问题1、2）

针对前述问题1、2，厂家答复如下（详见SR[HNA-HNA-26-0367-03B]）

### DESCRIPTION:

Following up on our previous Service Request (SR [HNA-HNA-26-0367-01C]) regarding the interpretation of "related" filter elements in the hydraulic system flushing procedure, we would like to submit an additional question for clarification.

For the "General" In the AMM 29-11-00-170-801 Hydraulic System A or B Flushing , it states:

"Replace the case drain filter element again, at the next maintenance opportunity following one week of normal operation."

"Replace all the filter elements in the system at the next maintenance opportunity following two months of normal operation"

We would like to confirm the scope of these instructions:

Does "case drain filter element" refer specifically to the one replaced during the current flushing task, or does it mean all case drain filter elements in the affected system (e.g., both EDP and EMDP)?

Does "all the filter elements in the system" refer only to those replaced as part of the flushing procedure, or does it mean every filter element in the entire hydraulic system (including pressure, return, case drain, PTU, etc.), regardless of whether they were replaced during the task?

We appreciate your assistance in clarifying these points to ensure our maintenance practices align with the procedure's intent. Please feel free to contact us if you need further details

### RESPONSE:

Boeing has reviewed both -01C and -02C messages and can provide Hainan Airlines Holding the following response:

We can provide that your understanding is correct. We can confirm that the scope of work should or can be limited to the pump that had the failure. The pressure filters and case drain filters are isolated for each system, and each individual pump on each system. If the EDP on system B had a failure, then only the filters directly related to that pump, and that circuit would need to be addressed. As mentioned in your example the return filter would be common to either pump on system B, and should also be addressed. The PTU filter should also be checked/replaced, but is only applicable to system B.

In addition, if either of the EMDPs failed, then the EMDP acoustic filter should also be checked.

As it pertains to the scope of "Replace all the filter elements in the system at the next maintenance opportunity following two months of normal operation" the above guidelines also apply. Only the affected filters, specific to the pump in question or common to the system circuit should be replaced again.

我们提出的问题

厂家答复

## 附厂家答复（针对前述问题3、4）

针对前述问题3、4，厂家答复如下（详见SR[HNA-HNA-26-0367-05B]）

### DESCRIPTION: 我们的问题

Thank you for your response. We would like to further discuss the scope of filters to be replaced for steps C(4) and C(5) in the flushing procedure (AMM 29-11-00-170-801).

For step C(4), "Inspect the EMDP acoustic filter for metal particle contamination," our understanding is that this inspection is only required when an EMDP fails. In other words, if only an EDP fails in System A or B, it is not necessary to inspect the EMDP acoustic filter in that system.

For step C(5), "Inspect the Hydraulic Systems A and B Return Filter Element for metal particle contamination," our understanding is that only the System A return filter element inspection is required when only a pump in System A fails, and similarly, only the System B return filter inspection is required when a pump in System B fails. In other words, it is not necessary to inspect the return filter in the other system, as the filters are isolated for each system.

Could you please confirm if our understanding is correct?

### RESPONSE: 厂家答复

Boeing has reviewed -04C messages and can provide Hainan Airlines Holding the following response:

We can provide that your understanding is correct.

Similar to our previous answer, we can confirm that the scope of work can be limited to the pump that had the failure. The pressure filters and case drain filters are isolated for each system, and each individual pump on each system. If the EMDP on system B had a failure, then only the filters directly related to that pump, and that circuit would need to be addressed. The EMDP acoustic filter should also be checked.

An EDP failure will not require replacement of the EMDP filters, or flushing the EMDP circuit, and an EMDP failure will not require replacement of the EDP filters, or flushing the EDP circuit.

We can also confirm that if a failure occurs on System A, only the Return Filter Element on System A needs to be addressed. System B Return Filter Element and other system B filters are independent of a System A failure.