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Q12A PAGE 2, Q12B E PG 12, Q12 BJ PG 17, Q12 C E PG 22, Q12 C J PG 30, Q12 D E PG 38, Q12 D J PG 40, Q12 E E PG 42 AND Q12 E J PG 49

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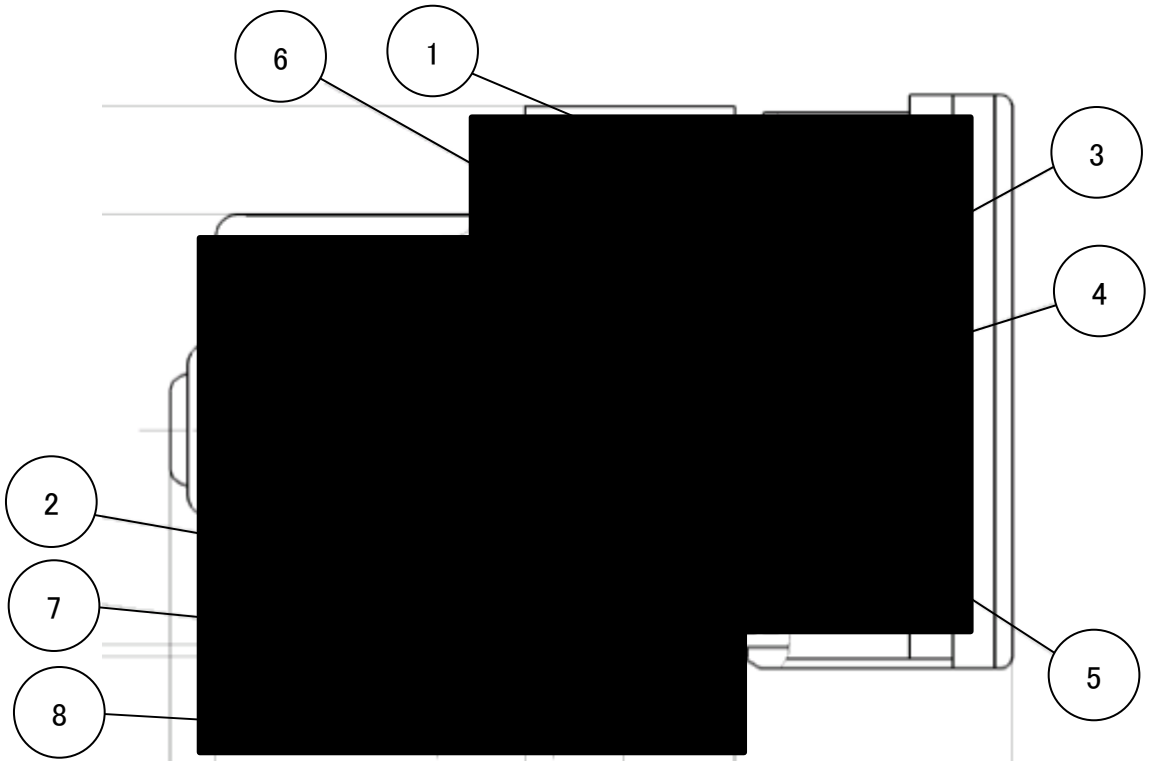
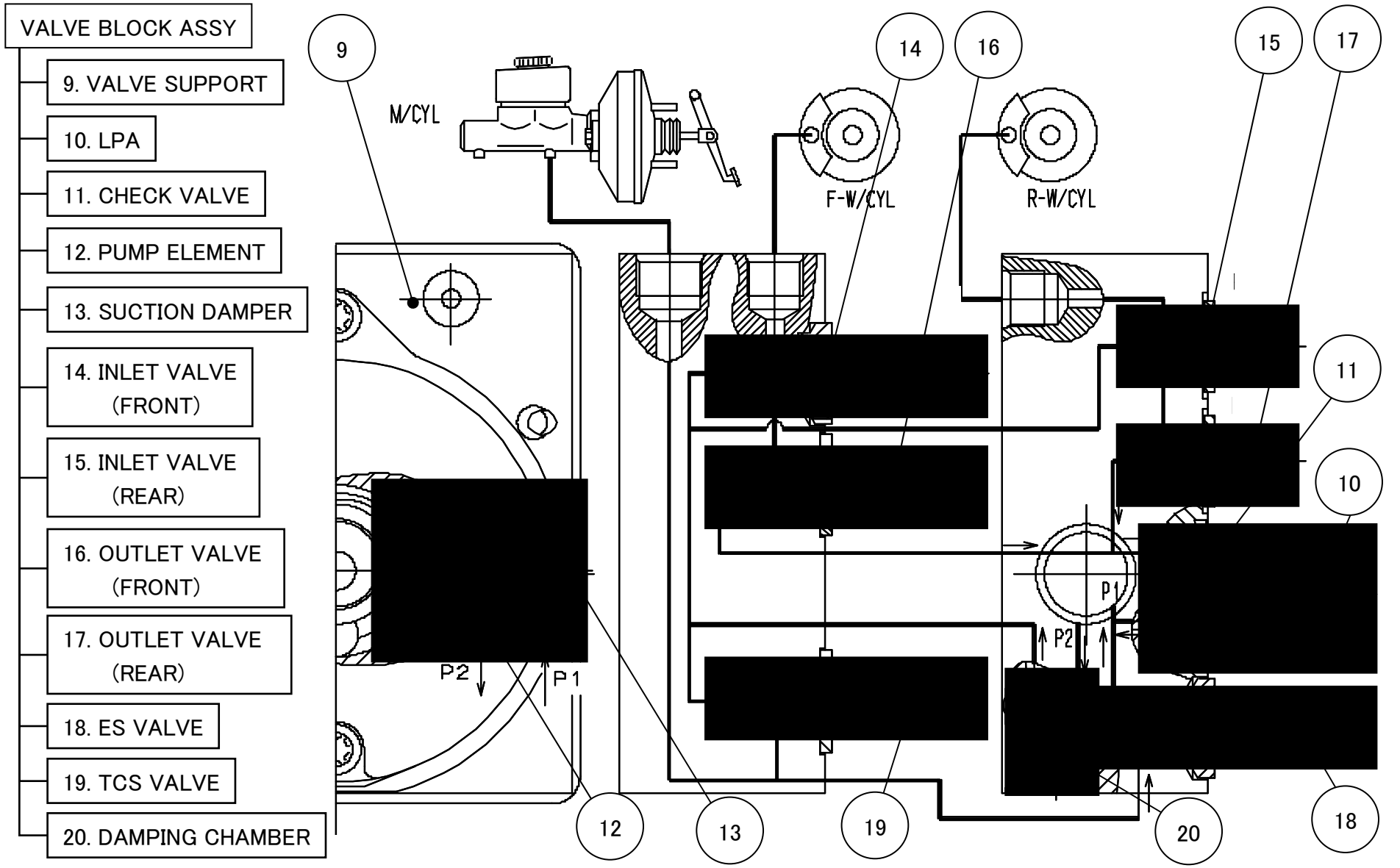
Q12A E

Q12a

- MODULATOR ASSY VSA
  - 1. VALVE BLOCK ASSY
  - 2. DC MOTOR
  - 3. EL. CONTROL UNIT
  - 4. MOTOR AXLE
  - 5. PRESSURE SENSOR
  - 6. SCREW SHORT
  - 7. SCREW LONG
  - 8. COVER WITH BRACKET

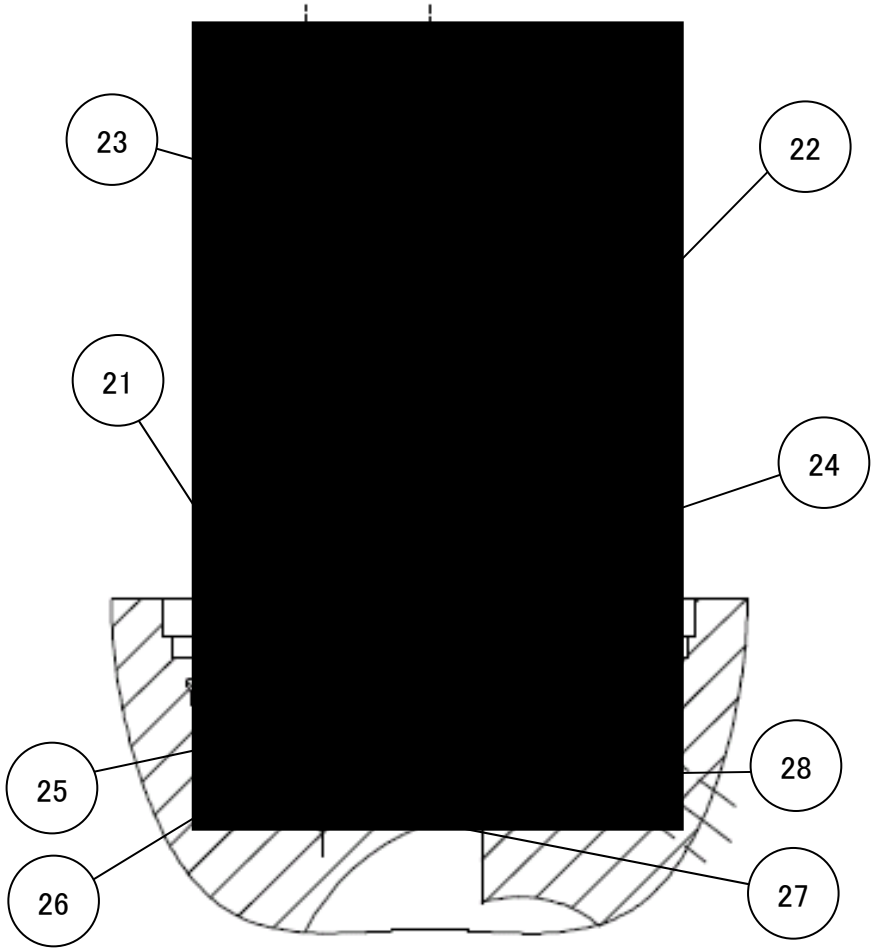


Q12a


VALVE BLOCK ASSY
9. VALVE SUPPORT
10. LPA
11. CHECK VALVE
12. PUMP ELEMENT
13. SUCTION DAMPER
14. INLET VALVE (FRONT)
15. INLET VALVE (REAR)
16. OUTLET VALVE (FRONT)
17. OUTLET VALVE (REAR)
18. ES VALVE
19. TCS VALVE
20. DAMPING CHAMBER
M/CYL
F-W/CYL
R-W/CYL
P1
P2

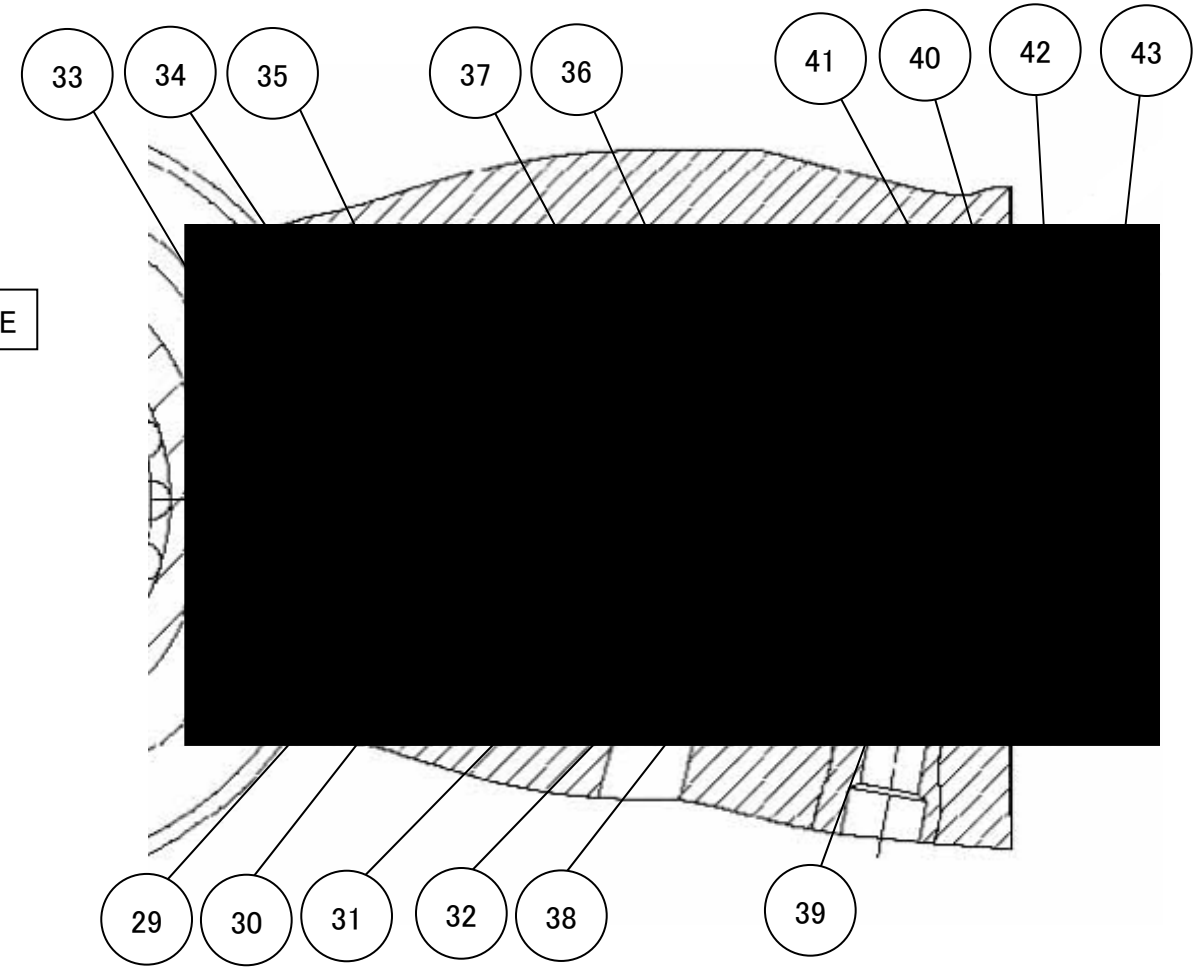
Q12a

- 10 LPA
  - 21. O-RING
  - 22. LPA PISTON
  - 23. COMPRESSION SPRING
  - 24. LPA POT
- 11 CHECK VALVE
  - 25. VALVE SEAT
  - 26. BALL
  - 27. SPRING SUPPORT
  - 28. SPRING

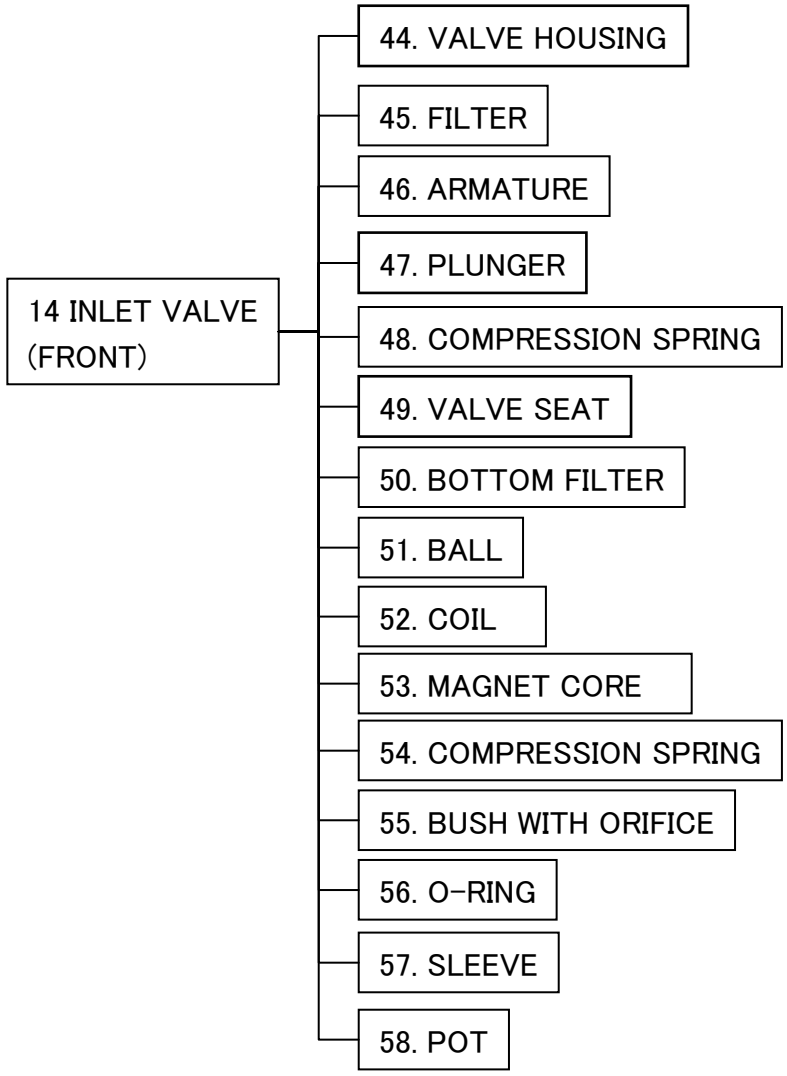


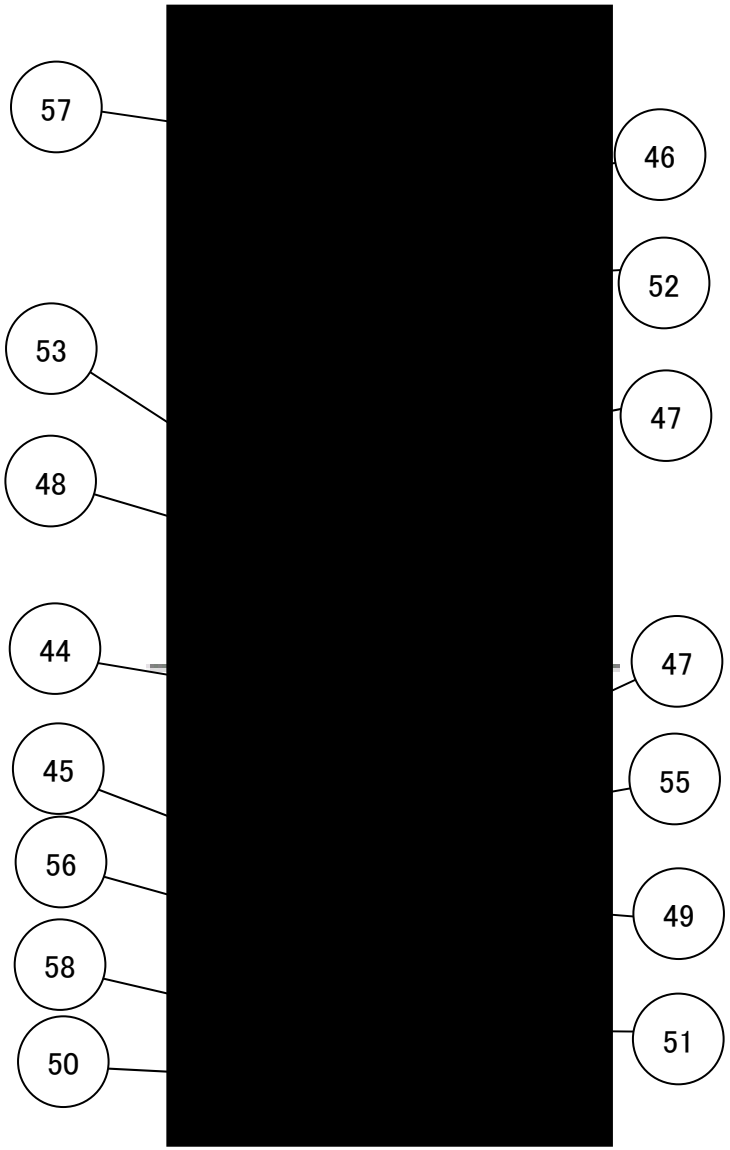
Q12a

- 12 PUMP ELEMENT
  - 29. BACK UP RING
  - 30. SEAL RING
  - 31. SPRING
  - 32. POT
  - 33. PISTON
  - 34. PUMP CARTRIDGE
  - 35. O-RING
  - 36. BALL
  - 37. SPRING OLV
  - 38. VALVE BODY
  - 39. FILTER
- 13 SUCTION DAMPER
  - 40. [redacted]
  - 41. [redacted]
  - 42. [redacted]
  - 43. [redacted]



Q12a


14 INLET VALVE (FRONT)
44. VALVE HOUSING
45. FILTER
46. ARMATURE
47. PLUNGER
48. COMPRESSION SPRING
49. VALVE SEAT
50. BOTTOM FILTER
51. BALL
52. COIL
53. MAGNET CORE
54. COMPRESSION SPRING
55. BUSH WITH ORIFICE
56. O-RING
57. SLEEVE
58. POT


57
46
52
53
47
48
44
47
45
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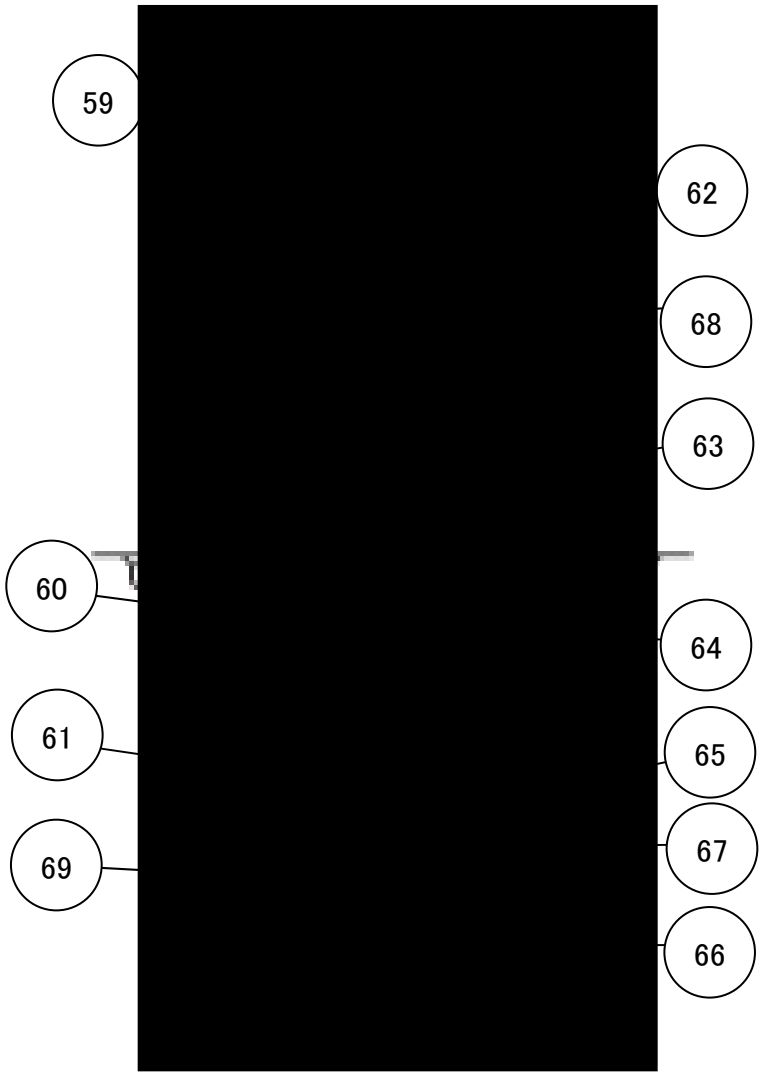
56
49
58
51
50

Q12a

15 INLET VALVE (REAR)

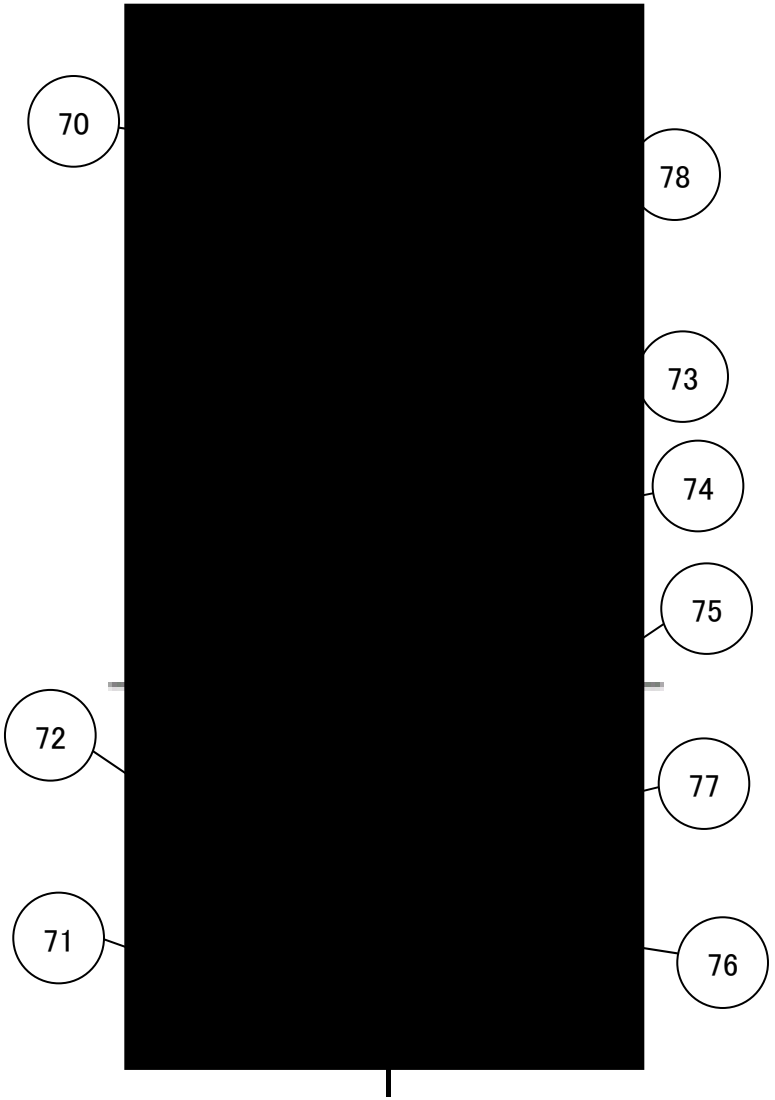
- 59. SLEEVE
- 60. VALVE HOUSING
- 61. FILTER
- 62. ARMATURE
- 63. PLUNGER
- 64. COMPRESSION SPRING
- 65. VALVE SEAT
- 66. BOTTOM FILTER
- 67. BALL
- 68. COIL
- 69. POT



Q12a

16 OUTLET VALVE (FRONT)

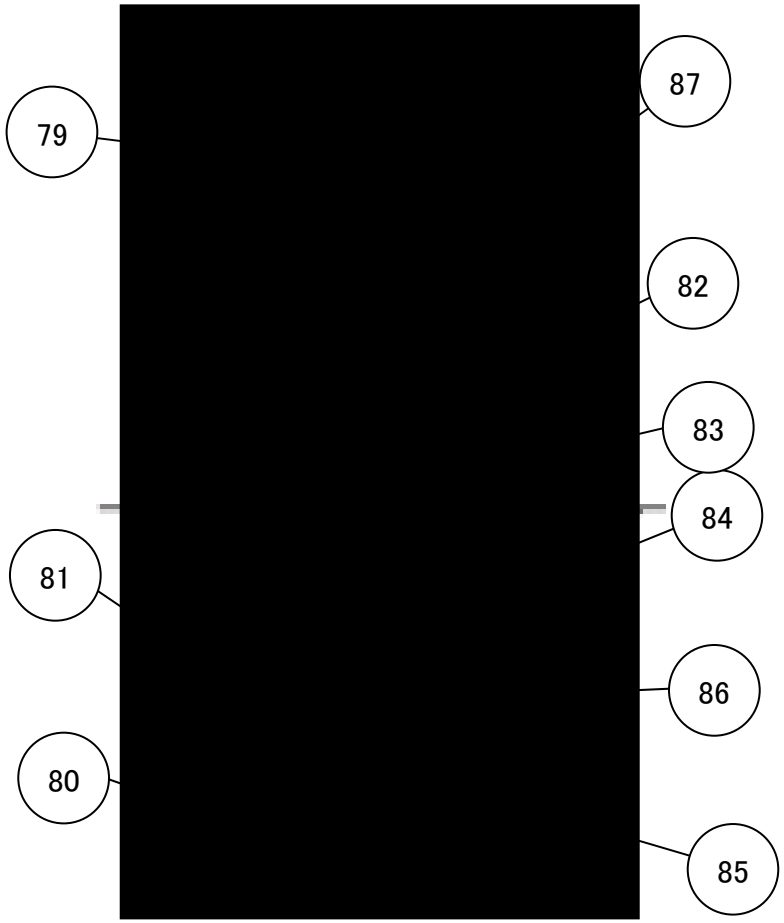
- 70. MAGNET CORE
- 71. BOTTOM FILTER
- 72. FILTER
- 73. COMPRESSION SPRING
- 74. ARMATURE
- 75. VALVE HOUSING
- 76. VALVE SEAT
- 77. PLUNGER
- 78. COIL



Q12a

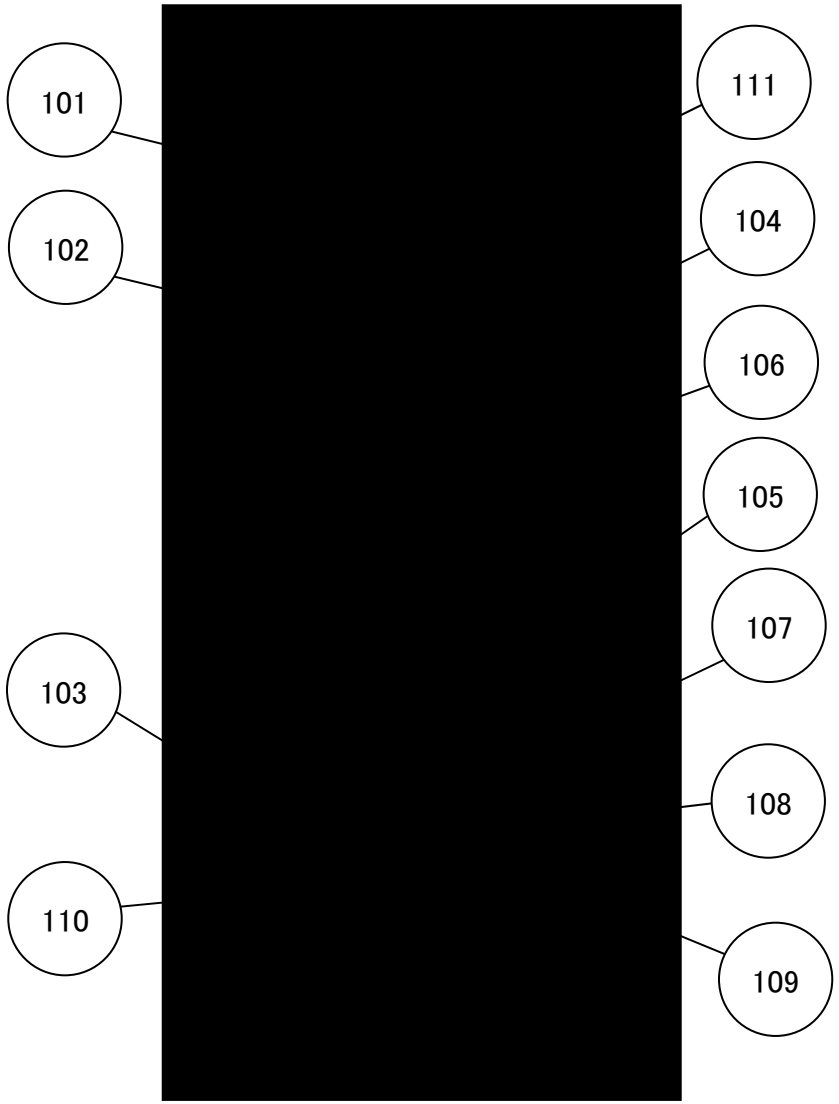
17 OUTLET VALVE (REAR)

- 79. MAGNET CORE
- 80. BOTTOM FILTER
- 81. FILTER
- 82. COMPRESSION SPRING
- 83. ARMATURE
- 84. VALVE HOUSING
- 85. VALVE SEAT
- 86. PLUNGER
- 87. COIL



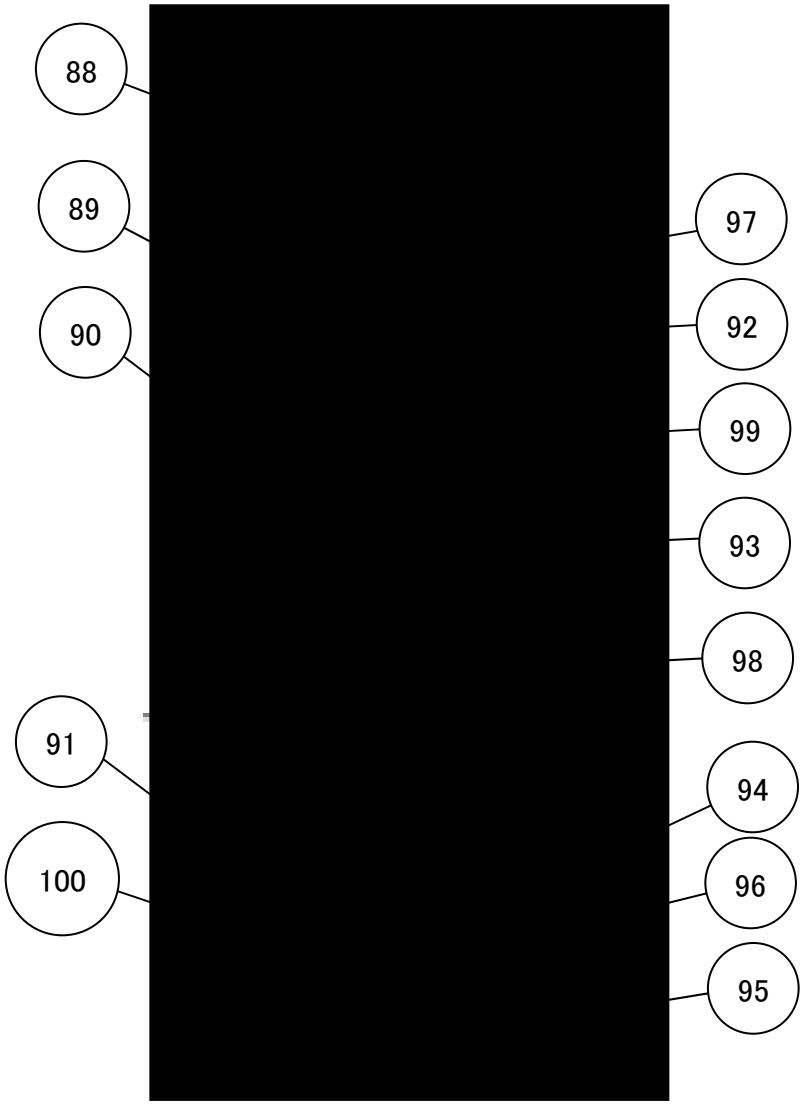
Q12a

- 18 ES VALVE
  - 101. MAGNET CORE
  - 102. SLEEVE
  - 103. FILTER
  - 104. COMPRESSION SPRING
  - 105. PLUNGER
  - 106. ARMATURE
  - 107. VALVE HOUSING
  - 108. COMPRESSION SPRING
  - 109. GUIDE SLEEVE
  - 110. SHUTTLE VALVE
  - 111. COIL



Q12a

- 19 TCS VALVE
  - 88. SLEEVE
  - 89. ARMATURE
  - 90. VALVE HOUSING
  - 91. FILTER
  - 92. COMPRESSION SPRING
  - 93. PLUNGER
  - 94. VALVE SEAT
  - 95. BOTTOM FILTER
  - 96. BALL
  - 97. COIL
  - 98. COMPRESSION SPRING
  - 99. BUSH
  - 100. POT



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Q12B E

Q12b

① Pump actuation ([redacted])
during system start-up due to initial diagnostics.

↓

②Negative pressure is occurred in [redacted]
(See Graph1)

←Factor 1

↓

③ Air suction [redacted]
(See test result 1)

←Factor 2

↓

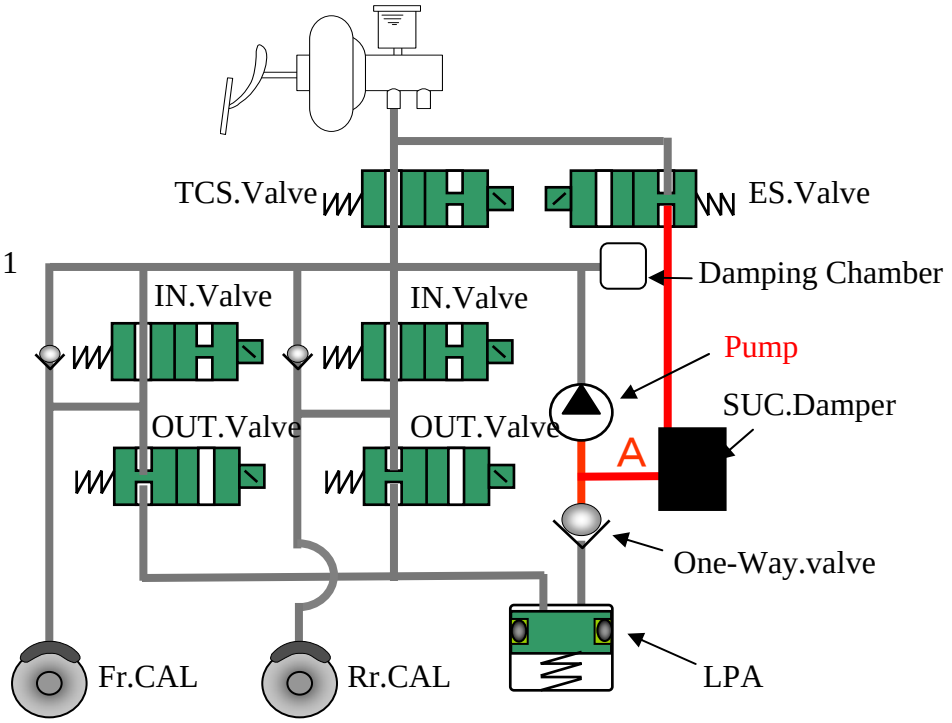
④ Air bleeding to primary brake circuit
during PUMP actuation.
(Initial check･system operating)

↓

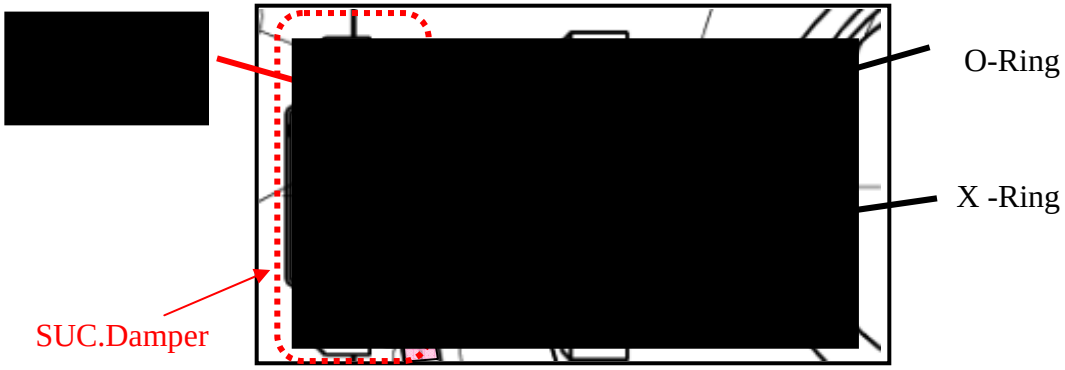
Increase gradually due to repeating (See Graph2)

↓

Soft brake occurs.



Detail drawing of PUMP area

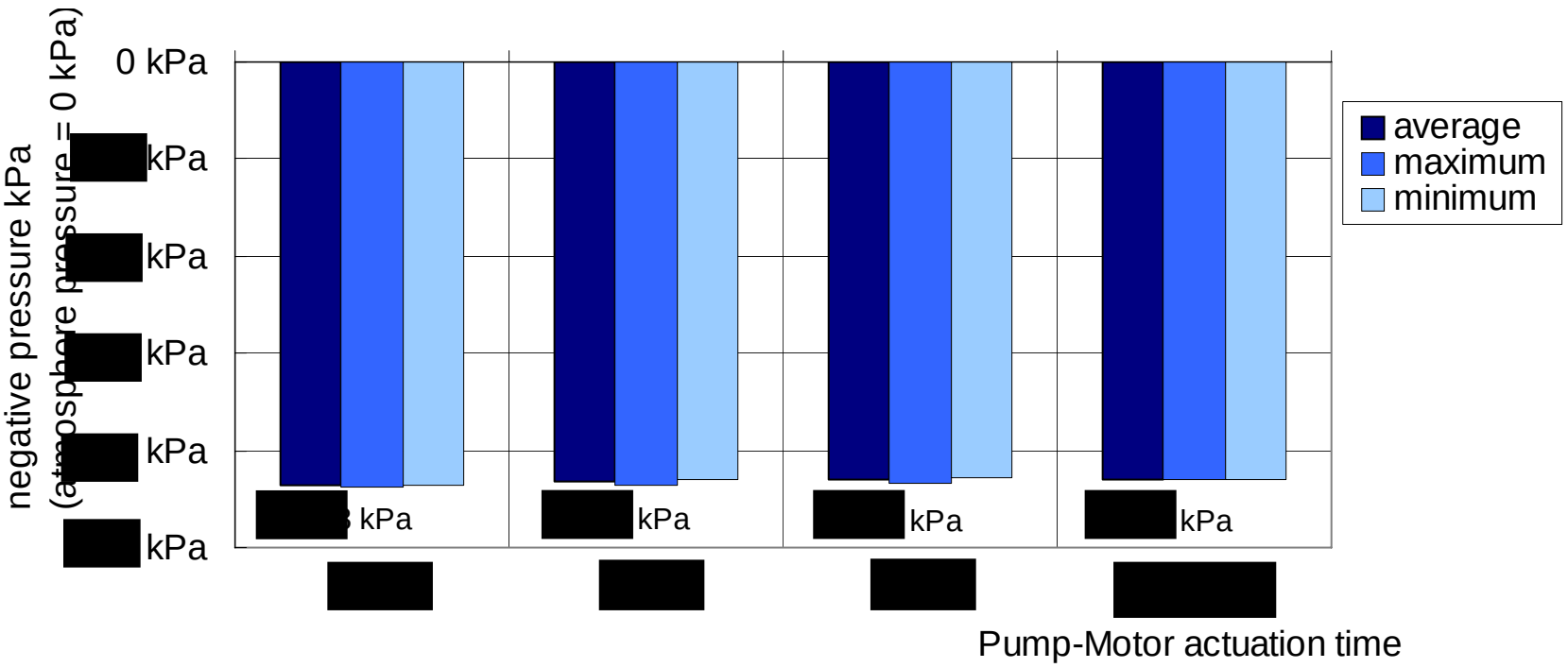


Q12b Graph1

② Relation between pump actuation and occurred negative pressure

- Maximum negative pressure around [redacted] kPa
- Maximum negative pressure can be generated over [redacted] ms pump actuation
- Maximum negative pressure is determined by opening pressure of suction valve

  That means it can generate negative pressure above [redacted] kPa



Graph 1, occurred negative pressure

Q12 Test Result 1

③ Identifying a suction area

Subject area of actual part was cut to identify the suction area and the following confirmations were conducted because it is assumed that air was suctioned from pump suction damper area.

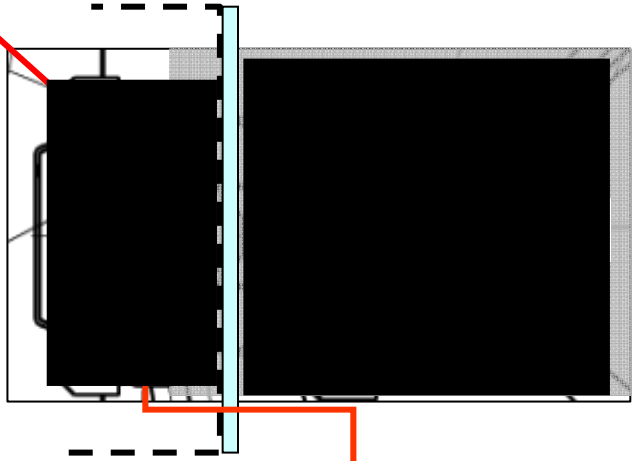
・Vacuum suction from the inside and confirm if air comes out. ⇒Air suction was confirmed.

Negative pressure suction : [redacted] kPa

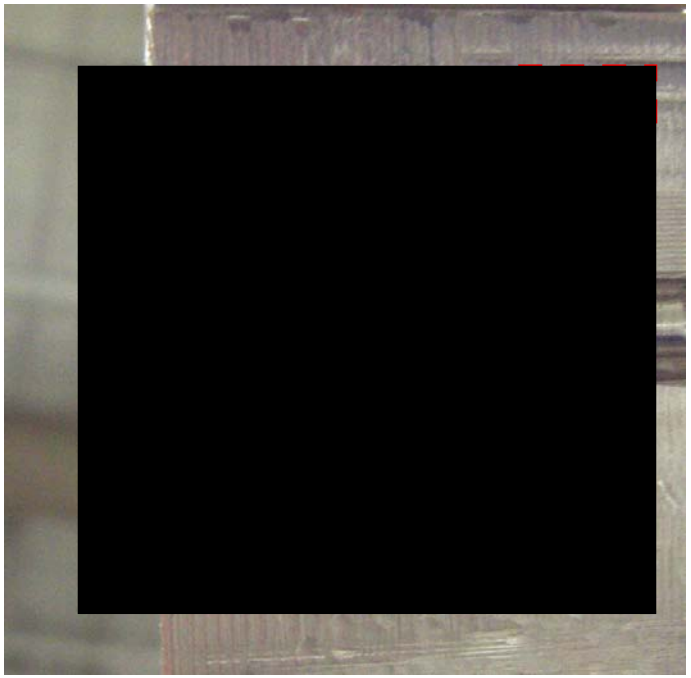
Amount of air suction : [redacted]

[redacted]

SUC.damper area was cut and observed after it was covered with acrylic board.



Negative pressure suction



It can be identified that SUC damper area is air suction area.

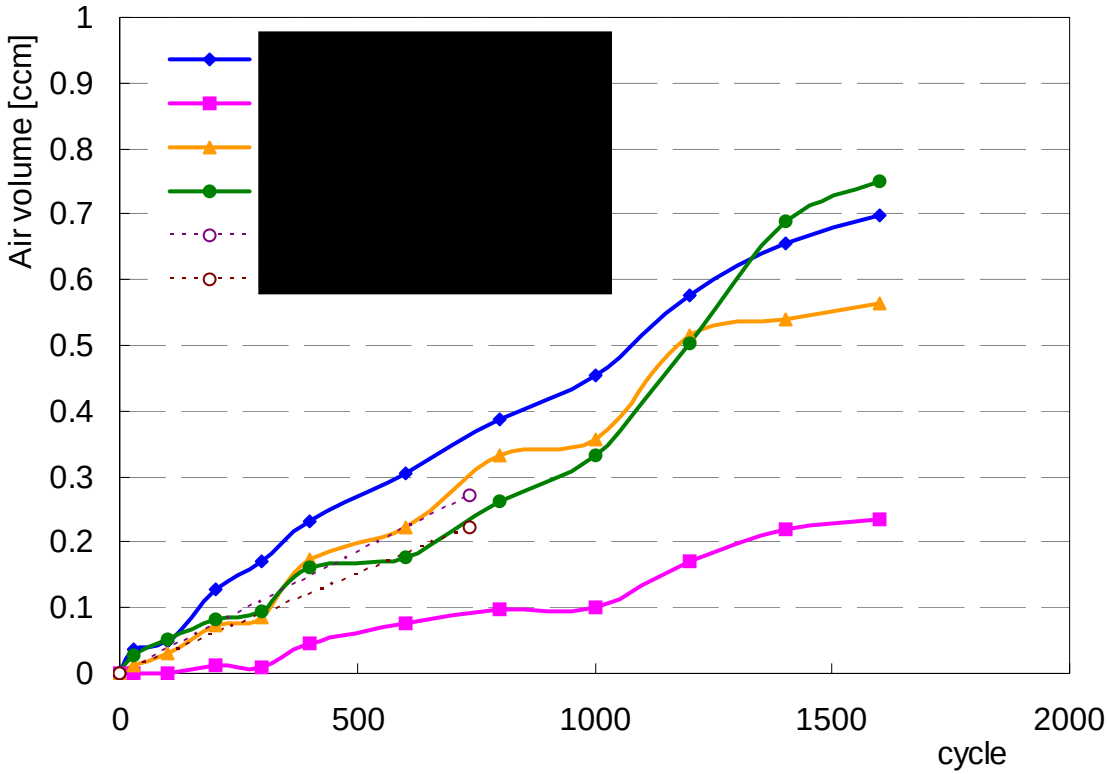
Q12b Graph2

Relation between pump initial check cycle and air intrusion

Measuring intruded air volume change at primary brake circuit of HCU after pump initial check cycles.

Maximum intruded air after 1600 cycle is 0.8ccm from 4 returned sample investigation.

The intruded air volume is calculated at both primary brake circuit of HCU by M/Cyl stroke change.



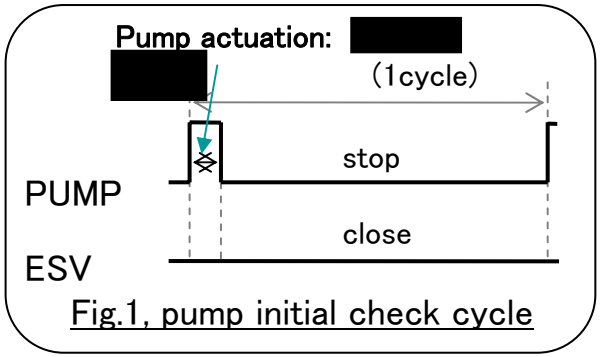


Fig.1, pump initial check cycle

Field Intruded air volume data

2.4 ccm
1.6 ccm
2.1 ccm
0.8 ccm
2.7 ccm
2.1 ccm

Graph 1, Intruded air volume at both (MC1/MC2) primary brake circuit of HCU

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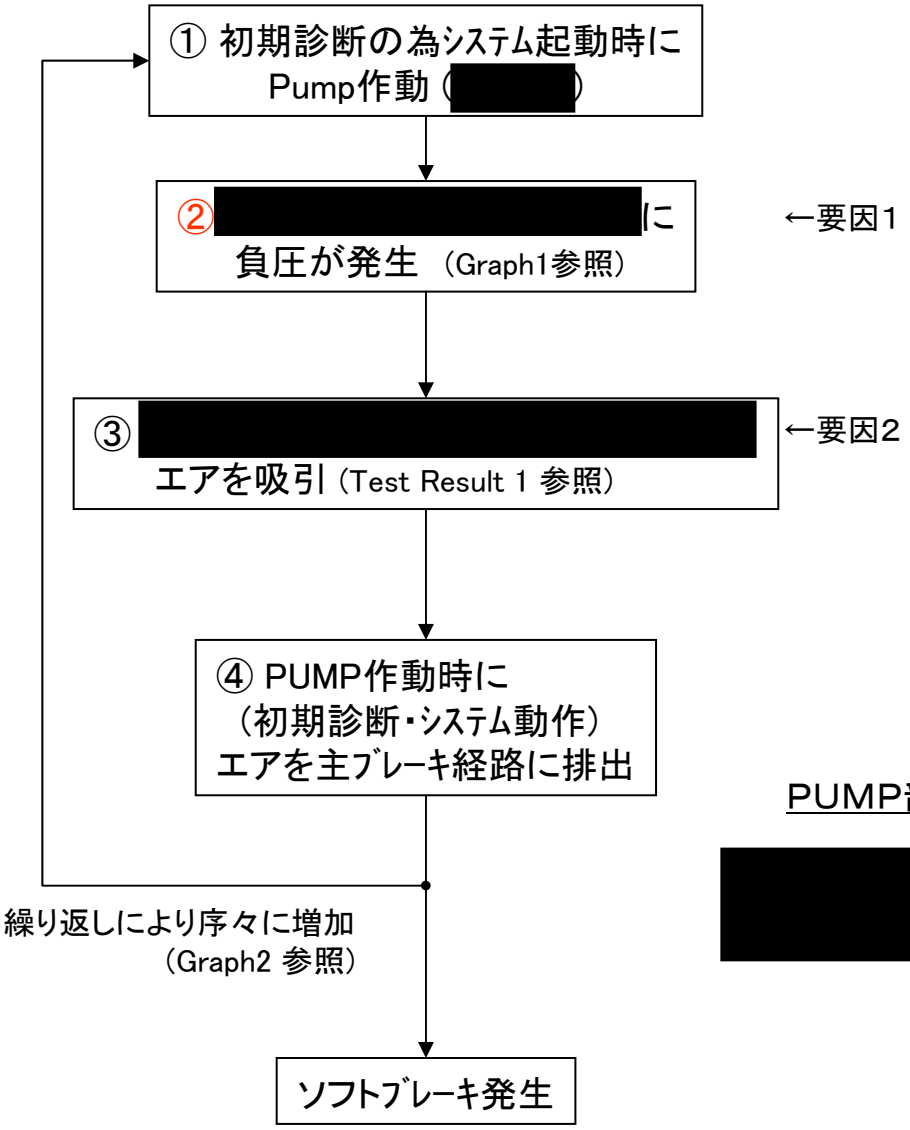
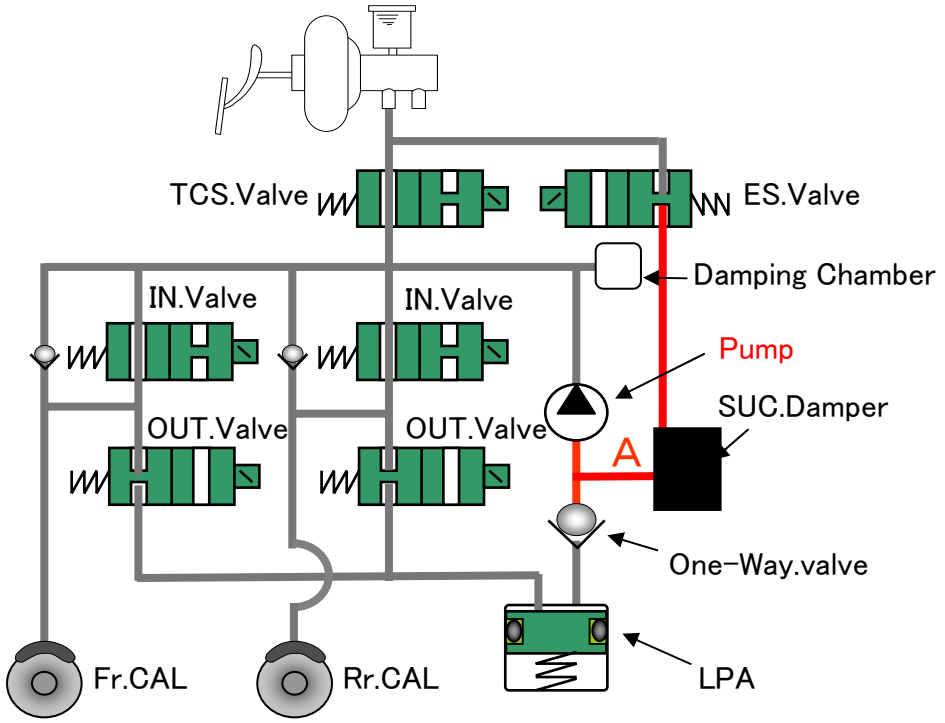
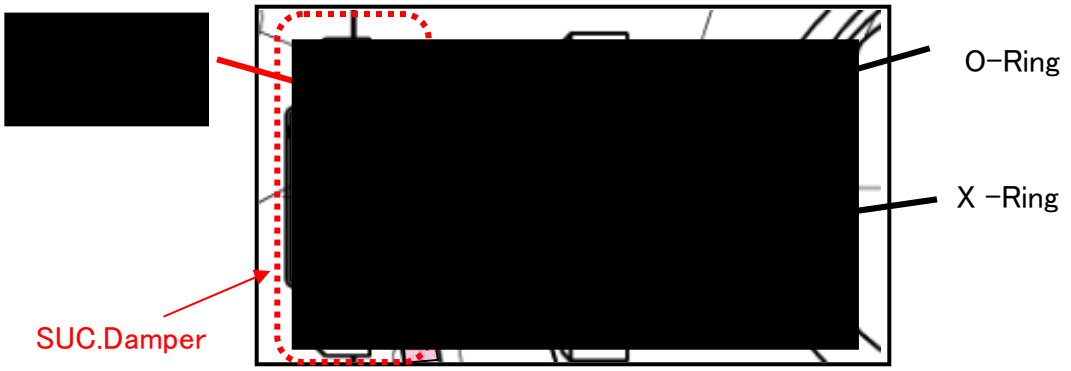
Q12b





PUMP部詳細図



Q12b Graph1

② Relation between pump actuation and occurred negative pressure

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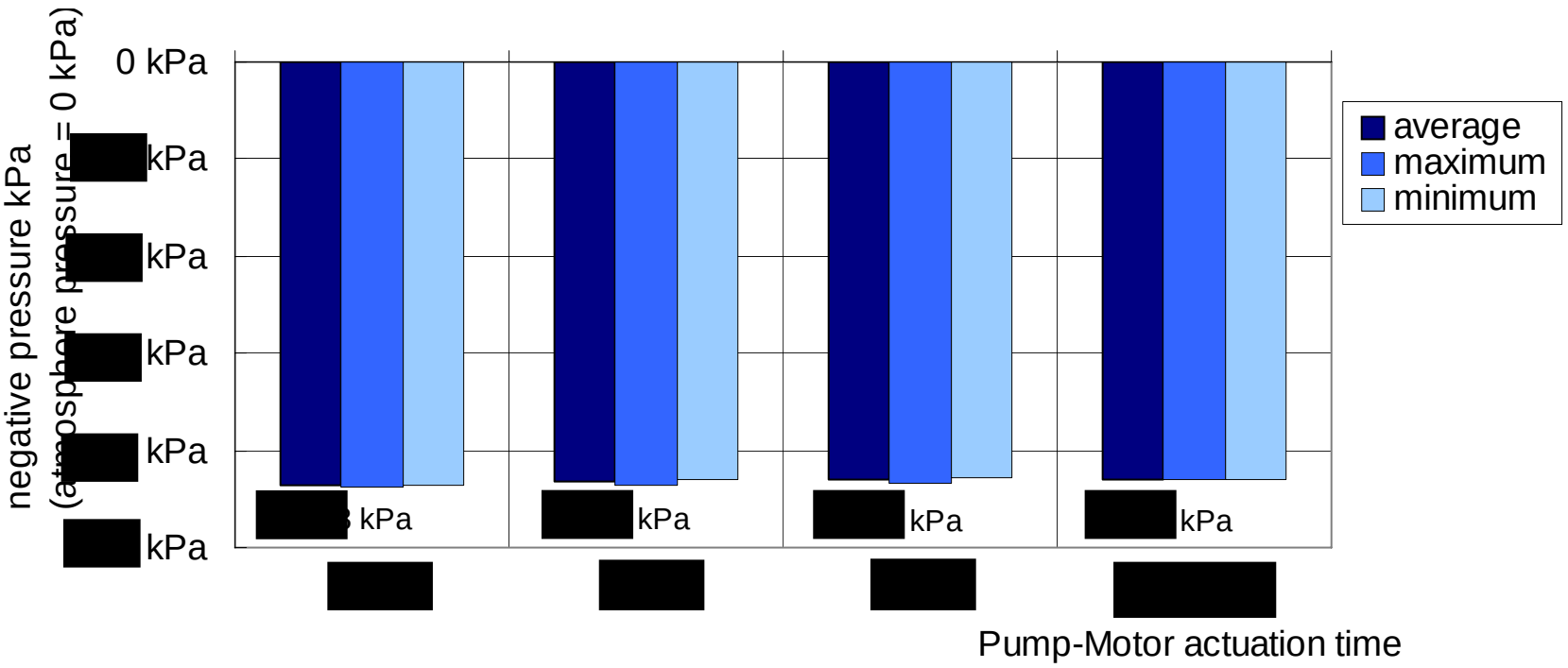
  That means it can generate negative pressure above [redacted] kPa



Graph 1, occurred negative pressure

Q12b Test Result 1

③ 吸い込み部位の特定

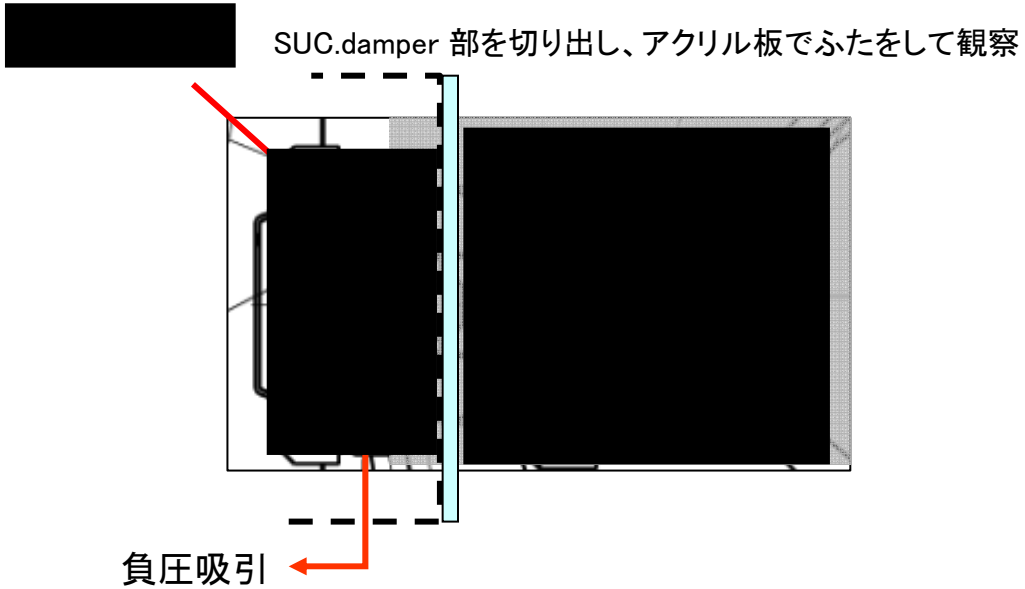
ポンプサクションダンパー部からのエア吸い込みと推測されるため、吸い込み箇所の特定のため現品の該当部位を切り出し、以下確認を実施した

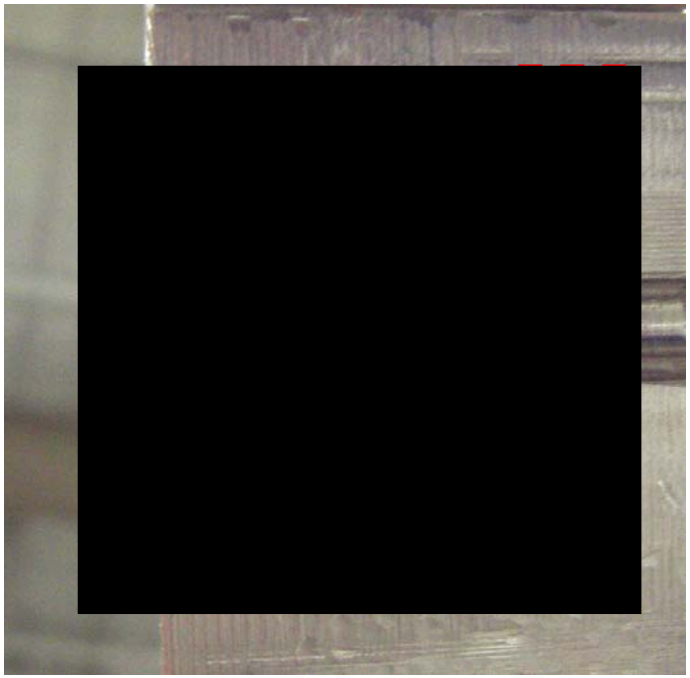
・内部から真空吸引し、エアが出てくるか確認 ⇒エア吸引が確認できた

負圧吸引 [redacted] kPa

エア吸引量：[redacted]

[redacted]





サクションダンパー部がエア吸い込み部位と特定できる

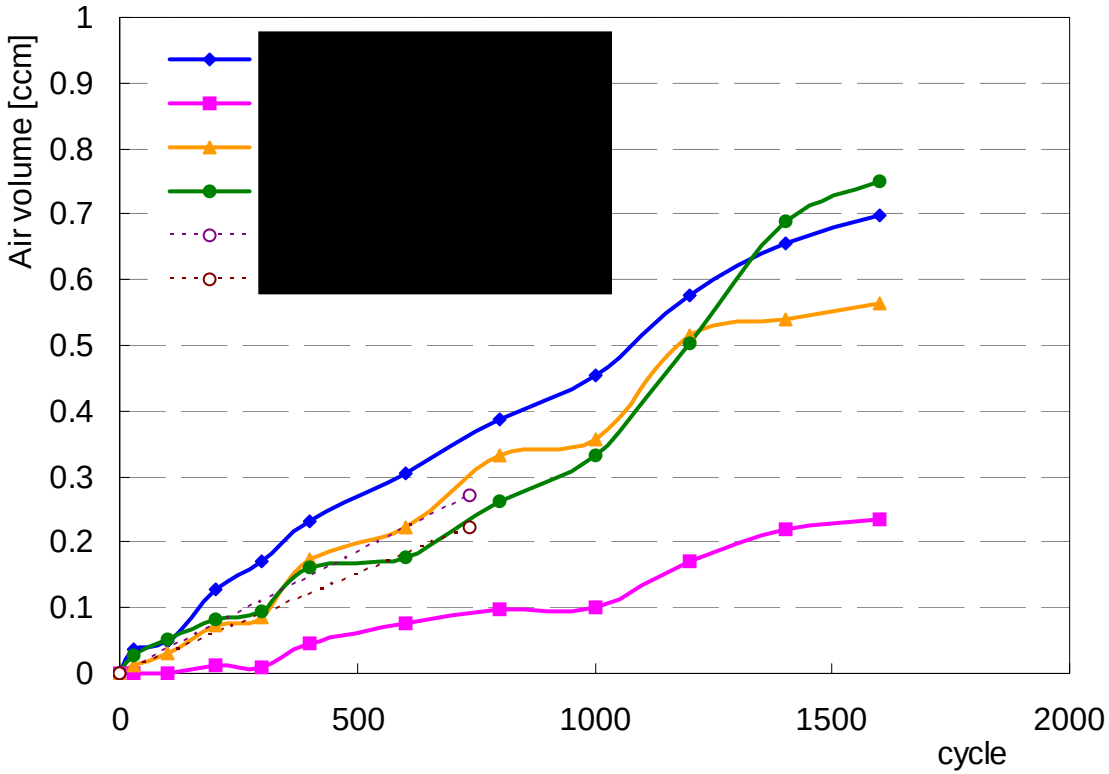
Q12b Graph2

Relation between pump initial check cycle and air intrusion

Measuring intruded air volume change at primary brake circuit of HCU after pump initial check cycles.

Maximum intruded air after 1600 cycle is 0.8ccm from 4 returned sample investigation.

The intruded air volume is calculated at both primary brake circuit of HCU by M/Cyl stroke change.



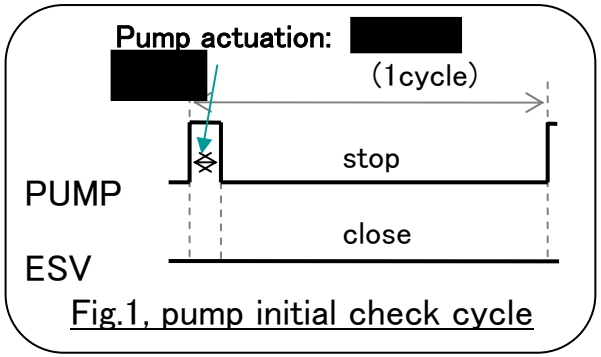


Fig.1, pump initial check cycle

Field Intruded air volume data

2.4 ccm
1.6 ccm
2.1 ccm
0.8 ccm
2.7 ccm
2.1 ccm

Graph 1, Intruded air volume at both (MC1/MC2) primary brake circuit of HCU

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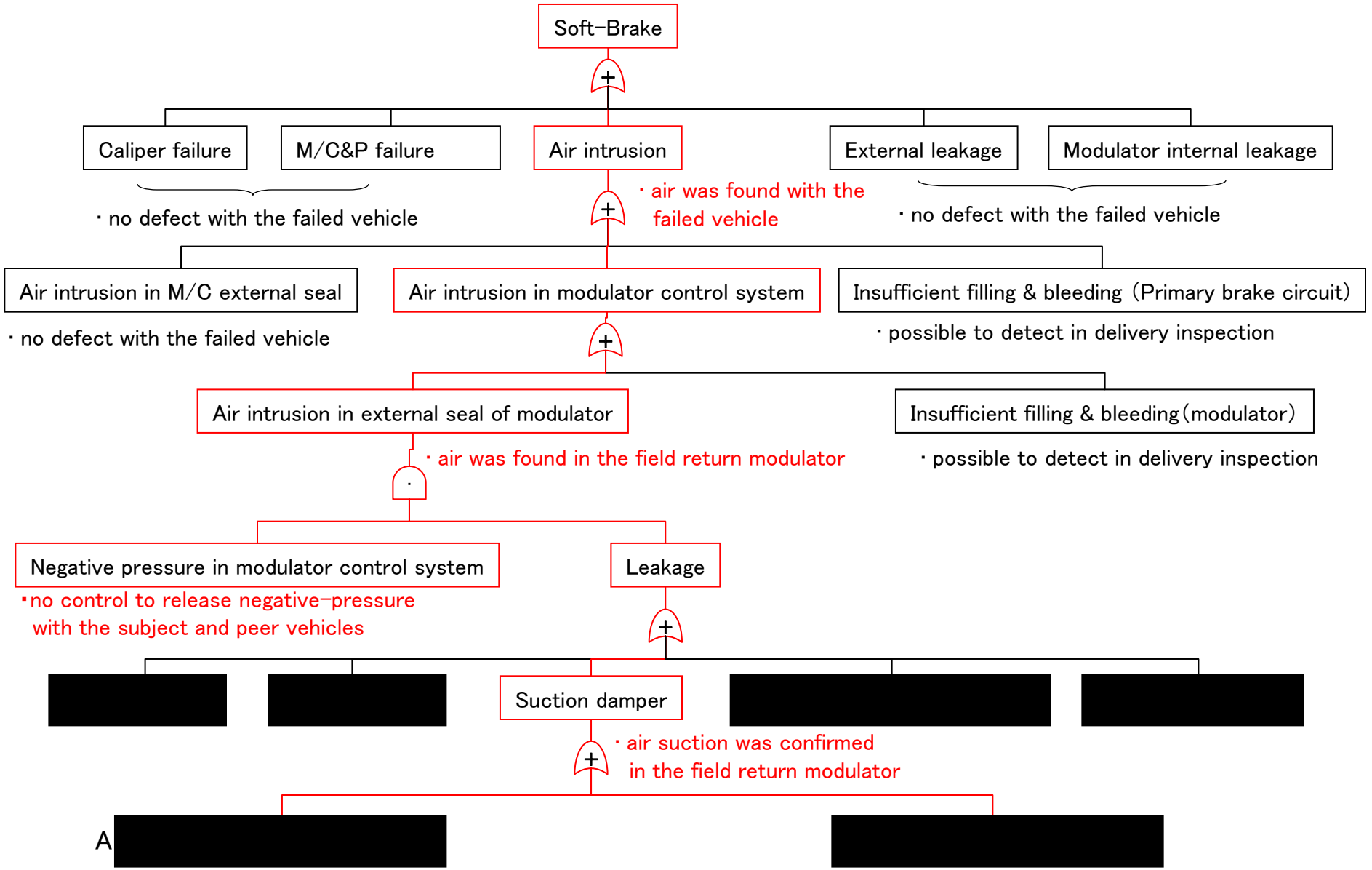
Q12C E

Q12c

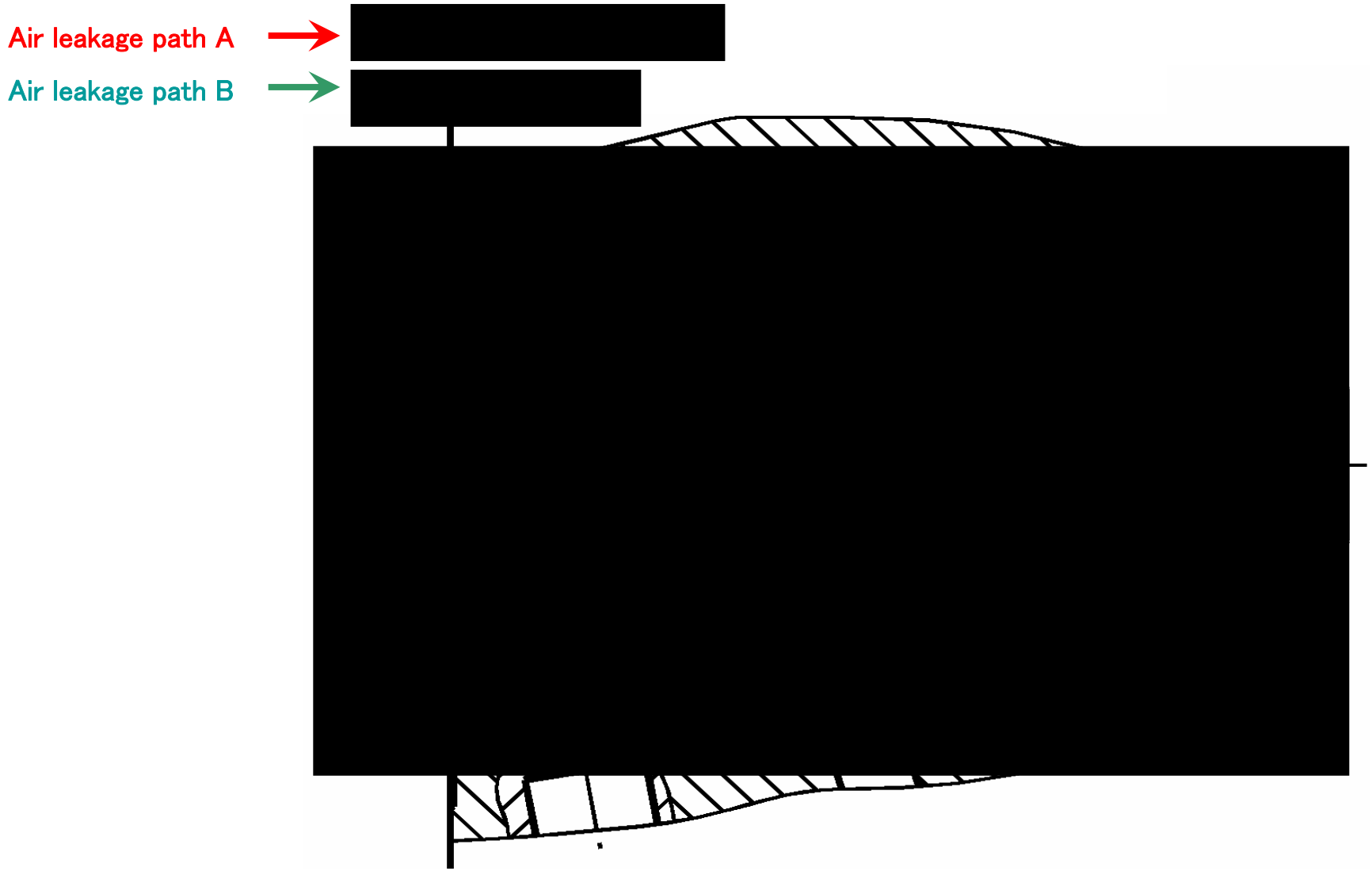
1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)



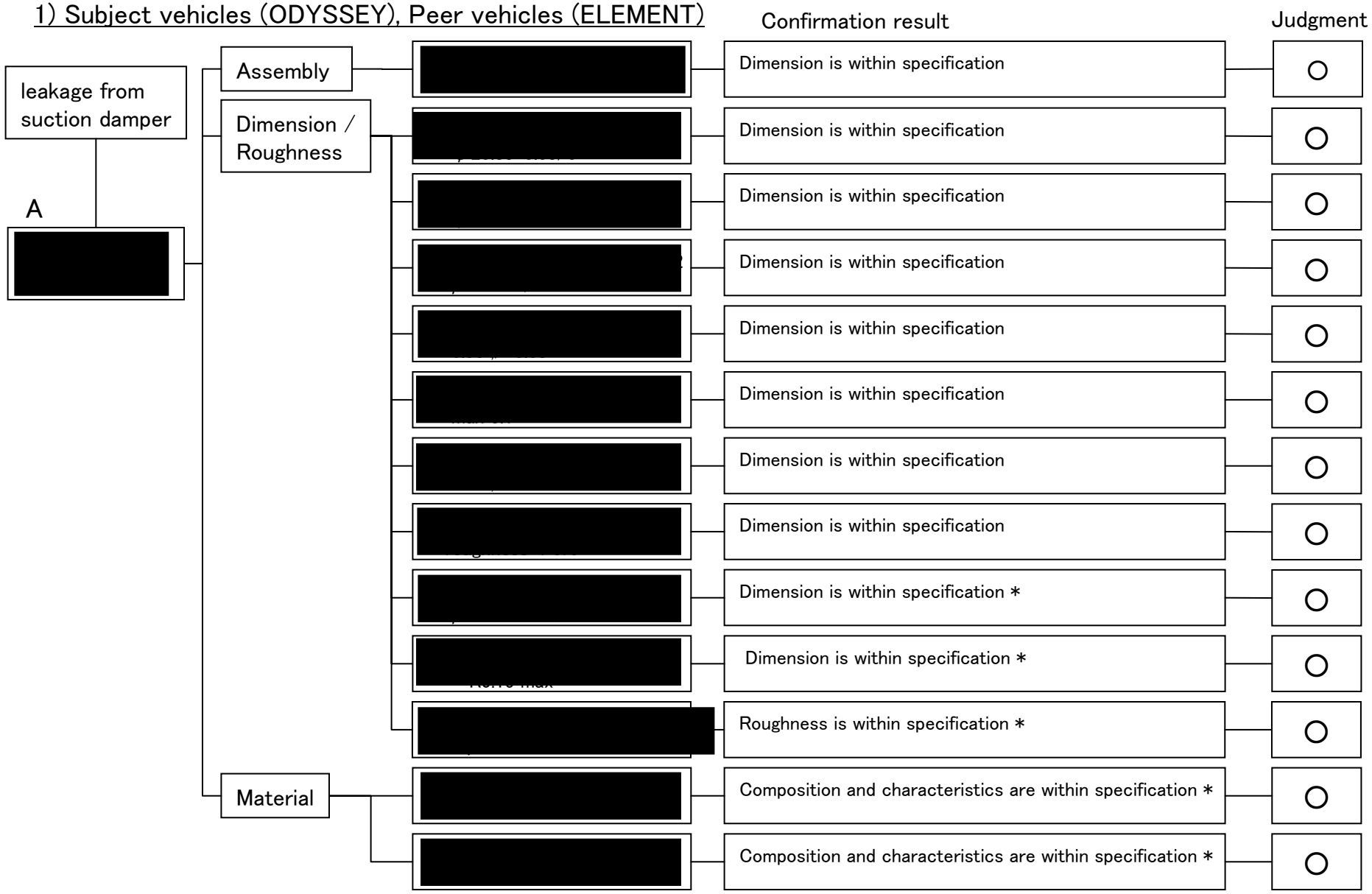
Q12c

1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)

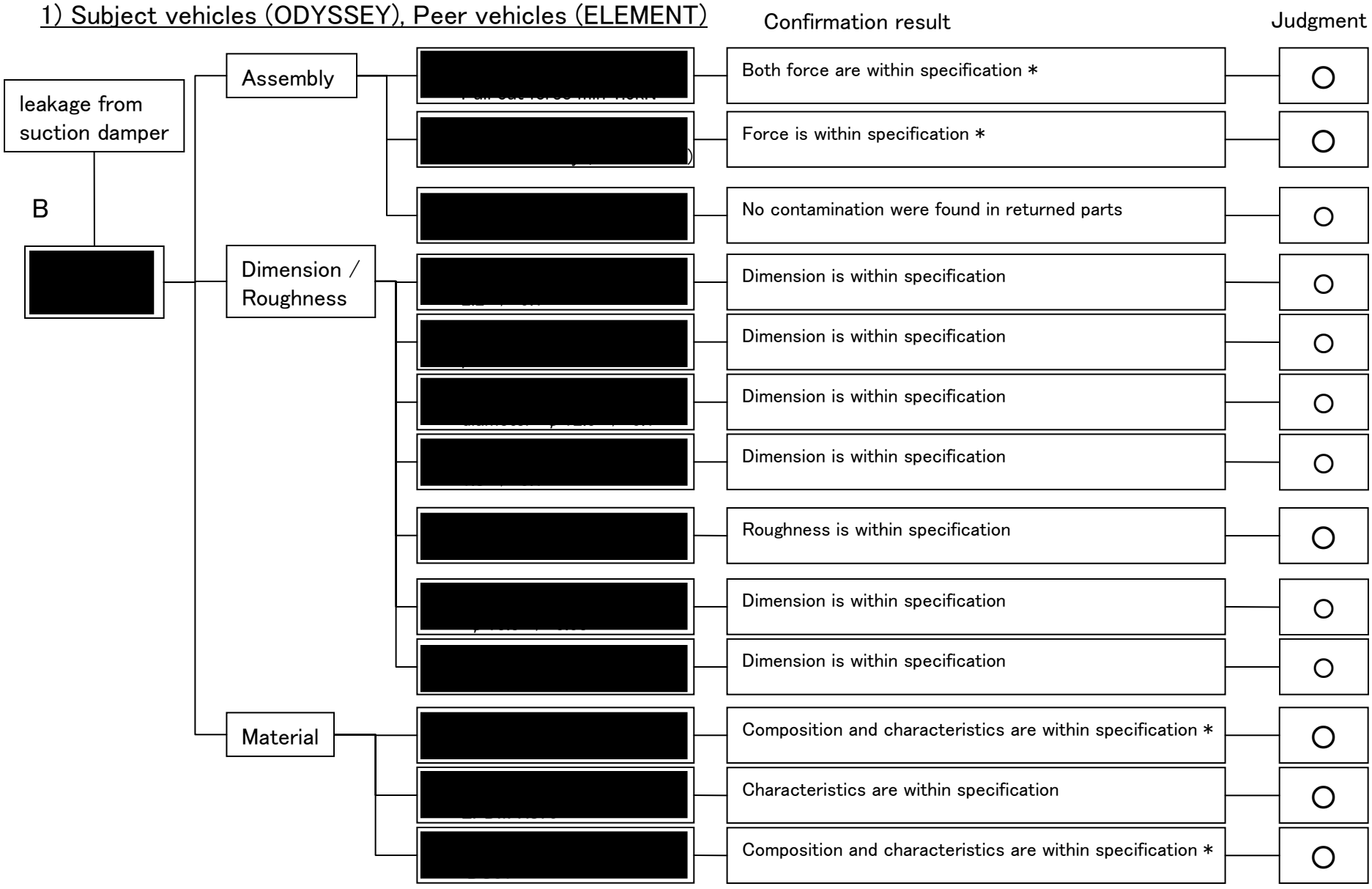
Air leakage path of Suction damper



Q12c

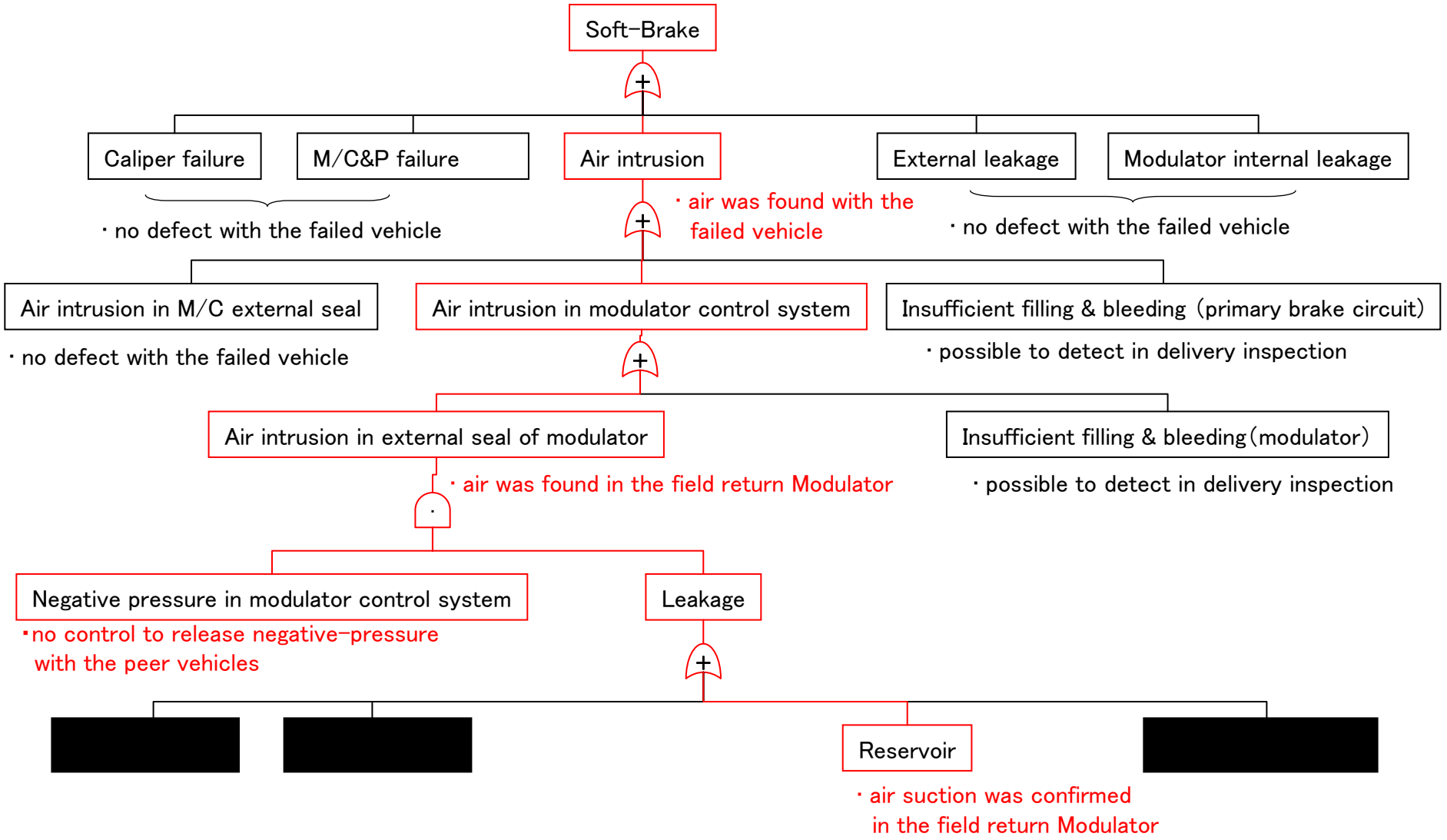

1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)
Confirmation result
Judgment
leakage from suction damper
A
[redacted]
Assembly
Dimension / Roughness
Material
[redacted]
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification *
Dimension is within specification *
Roughness is within specification *
Composition and characteristics are within specification *
Composition and characteristics are within specification *
○
○
○
○
○
○
○
○
○
○
○
○
○
Specific factor could not be found
* result from production sample and/or inspection certificate

Q12c


1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)
Confirmation result
Judgment
leakage from suction damper
B
[redacted]
Assembly
Dimension / Roughness
Material
[redacted]
Both force are within specification *
Force is within specification *
No contamination were found in returned parts
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Roughness is within specification
Dimension is within specification
Dimension is within specification
Composition and characteristics are within specification *
Characteristics are within specification
Composition and characteristics are within specification *
○
Specific factor could not be found
* result from production sample and/or inspection certificate

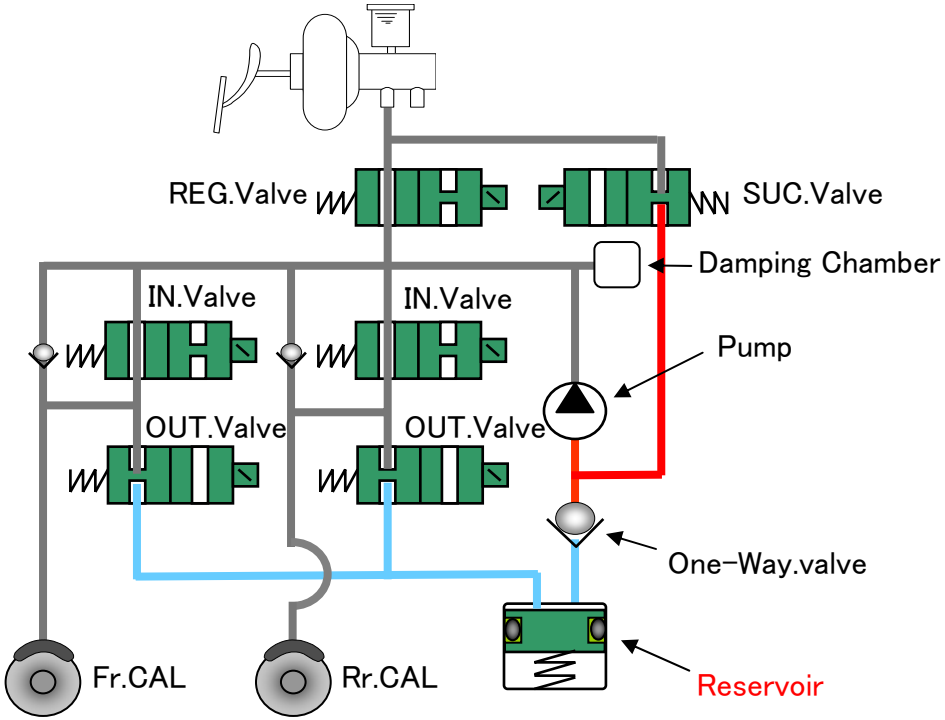
Q12c

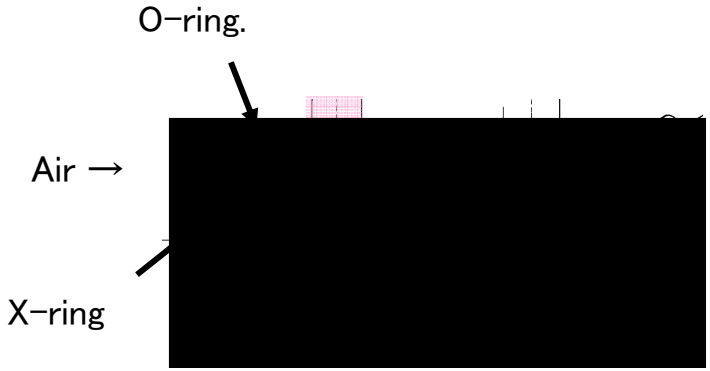
2) Peer vehicles (ACCORD)



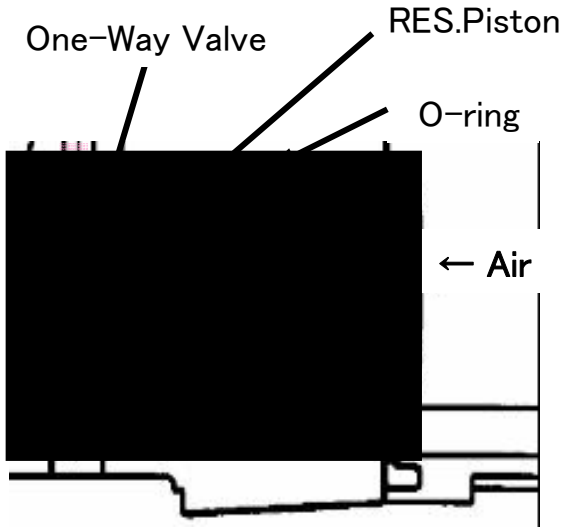
Q12c

2) Peer vehicles (ACCORD)





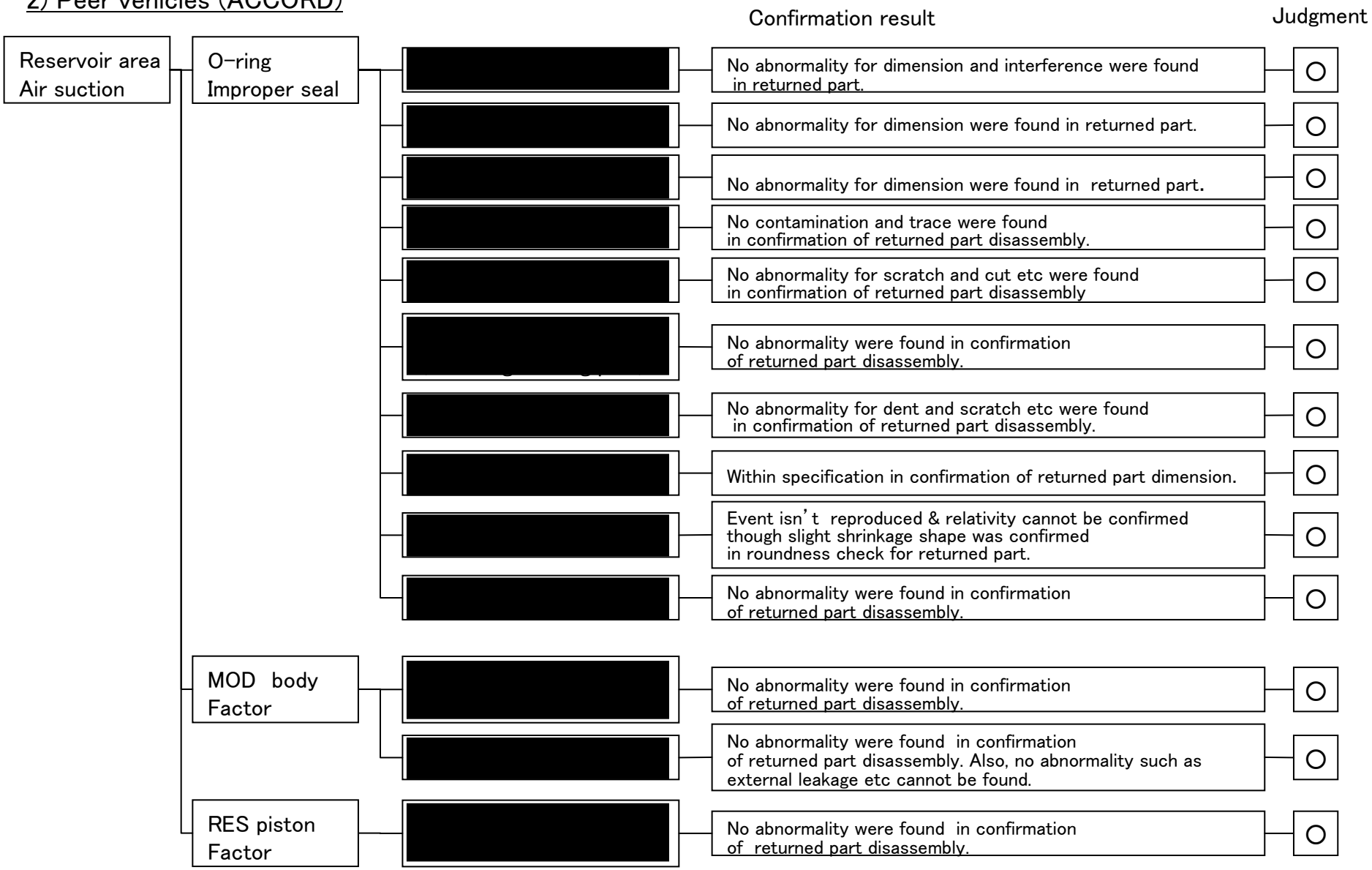
Pump



Reservoir

Q12c

2) Peer vehicles (ACCORD)



Specific factor could not be found

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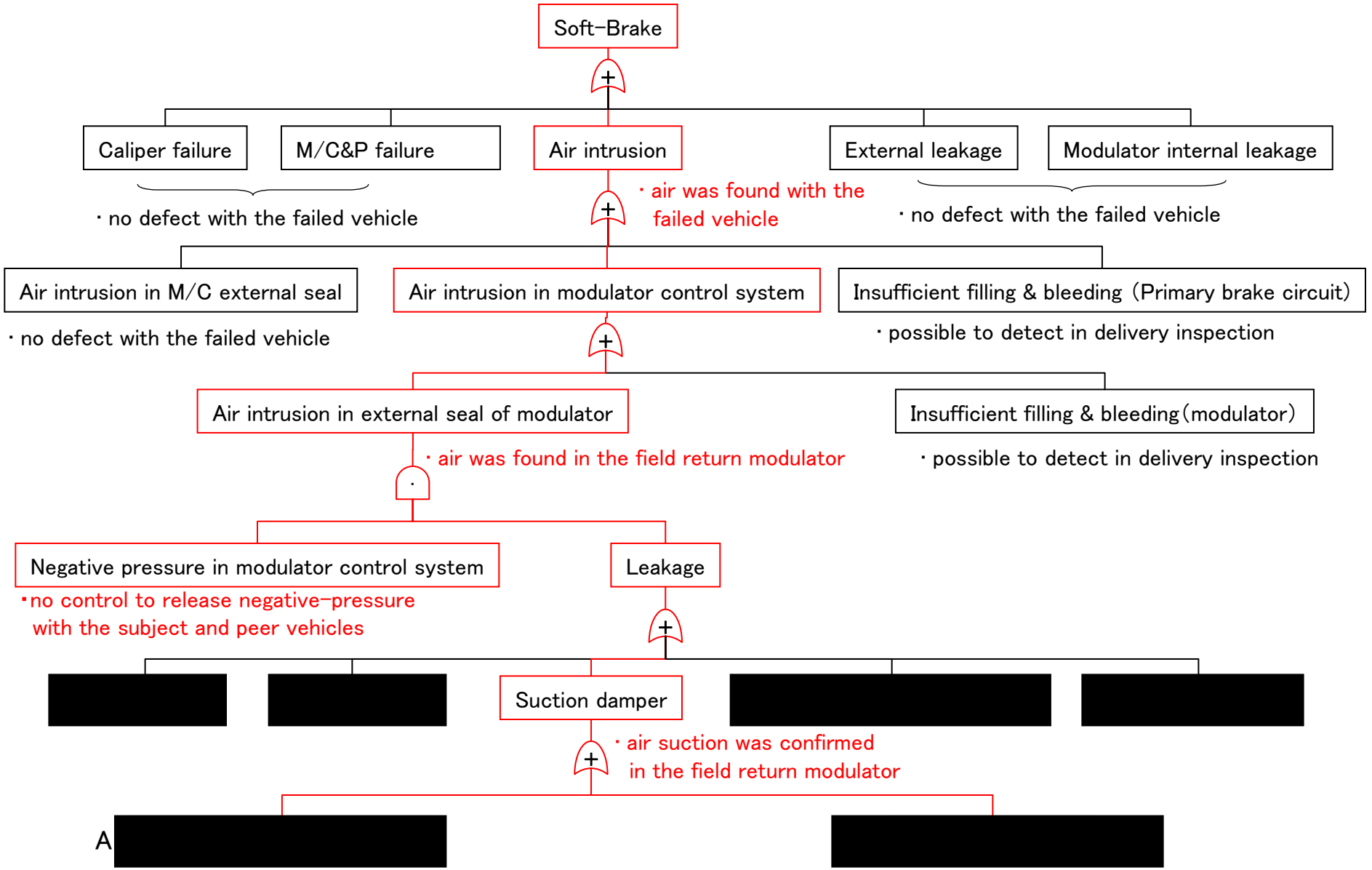
Q12C J

Q12c

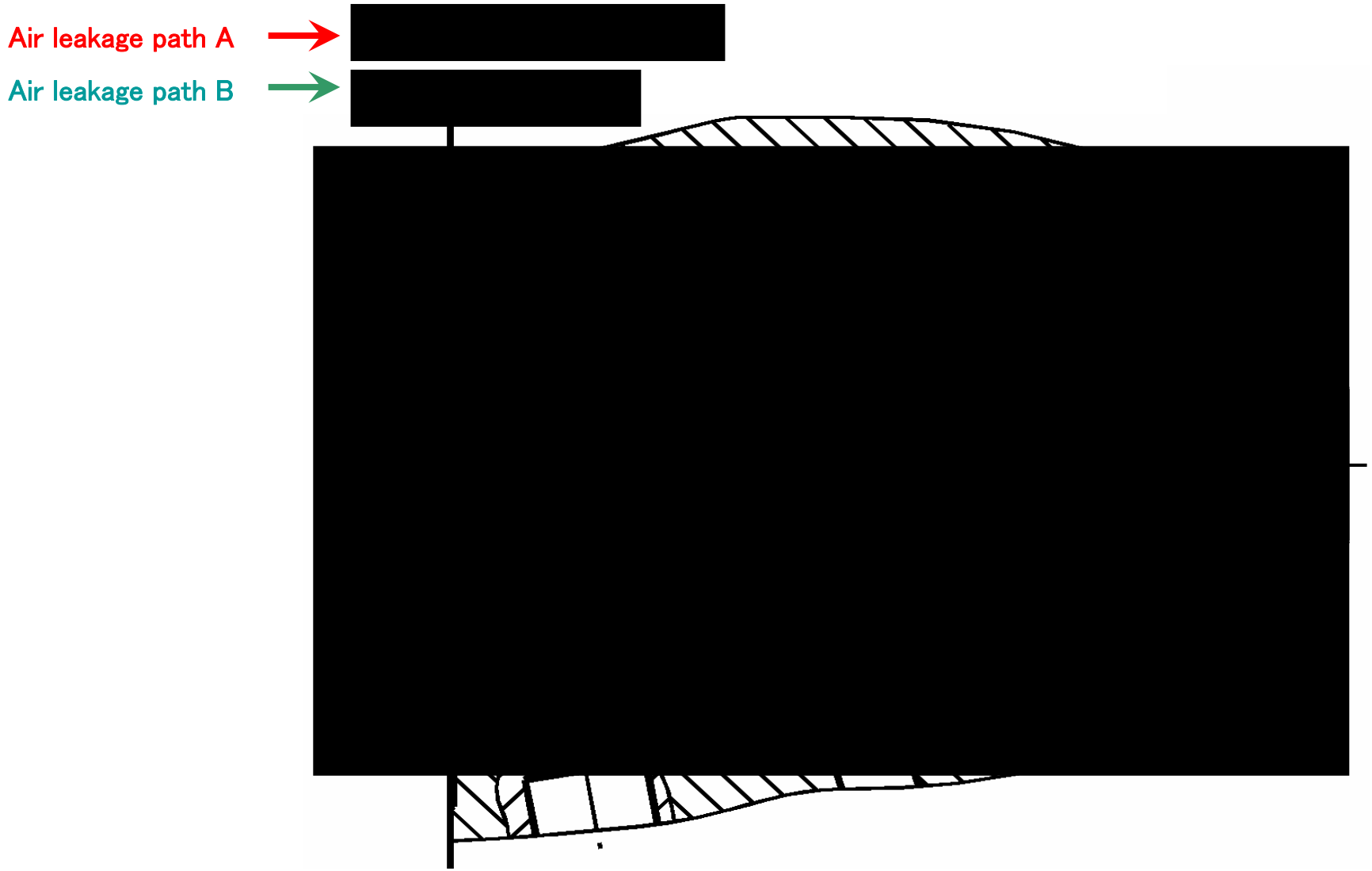
1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)



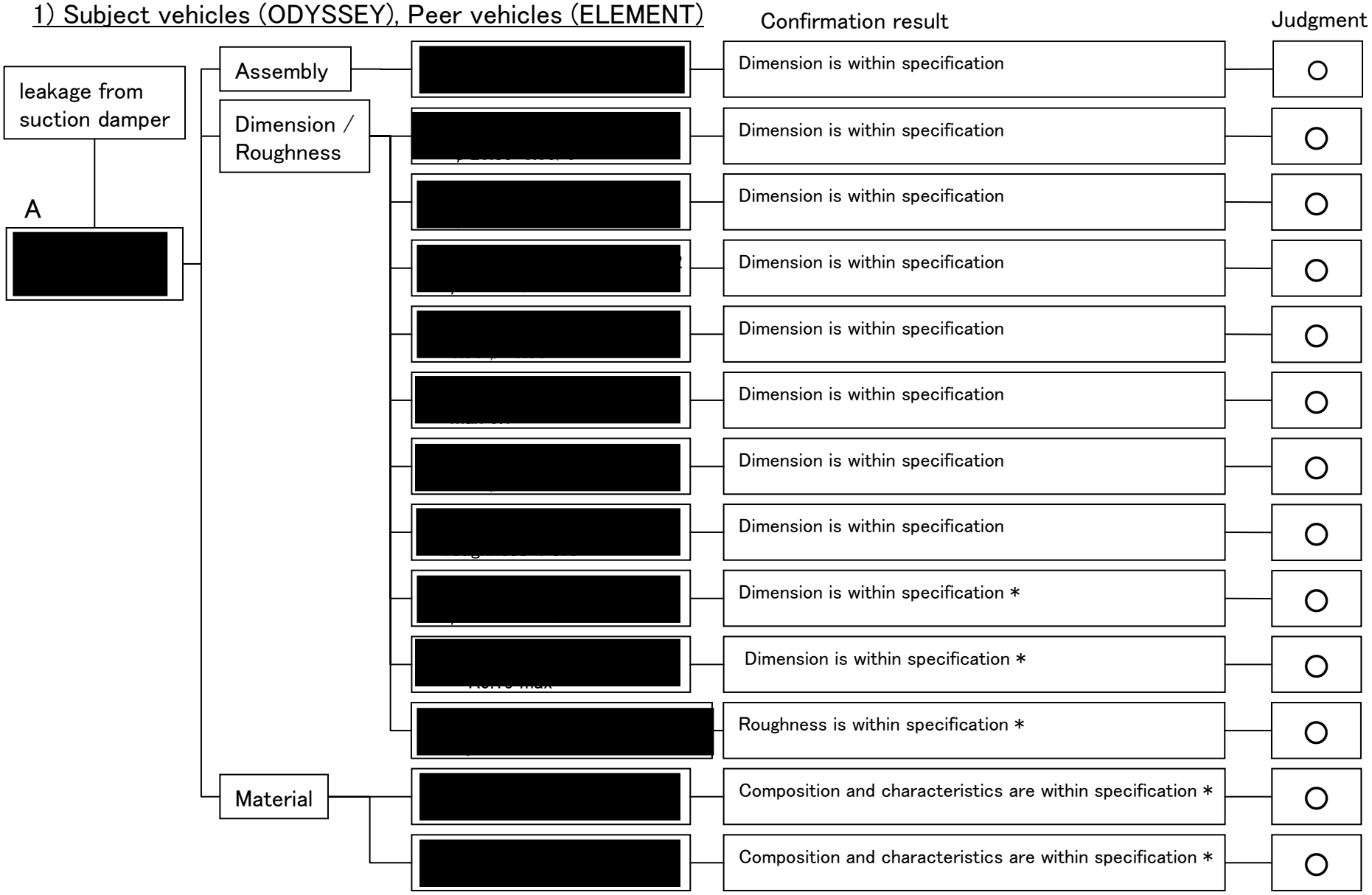
Q12c

1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)

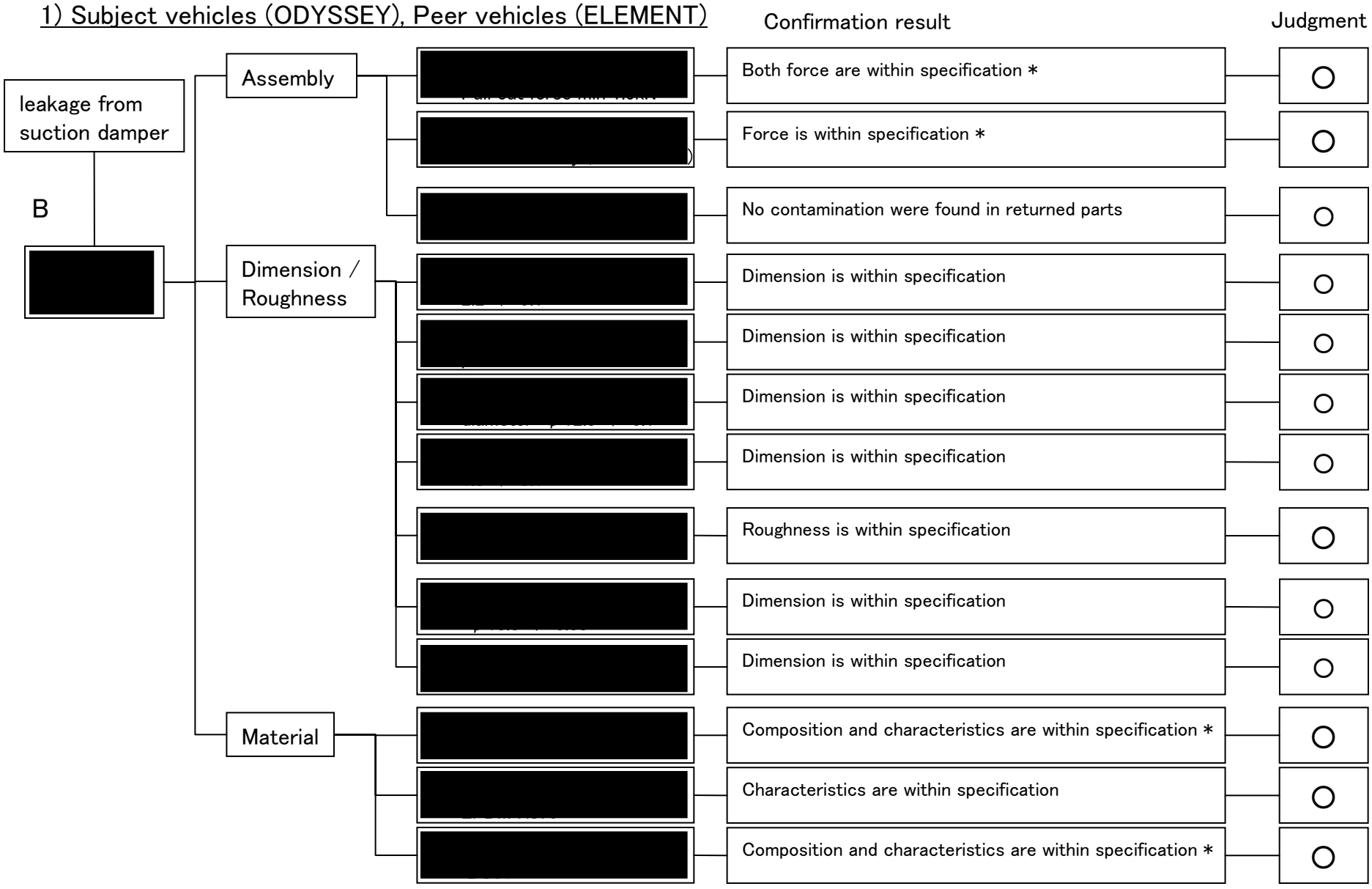
Air leakage path of Suction damper



Q12c

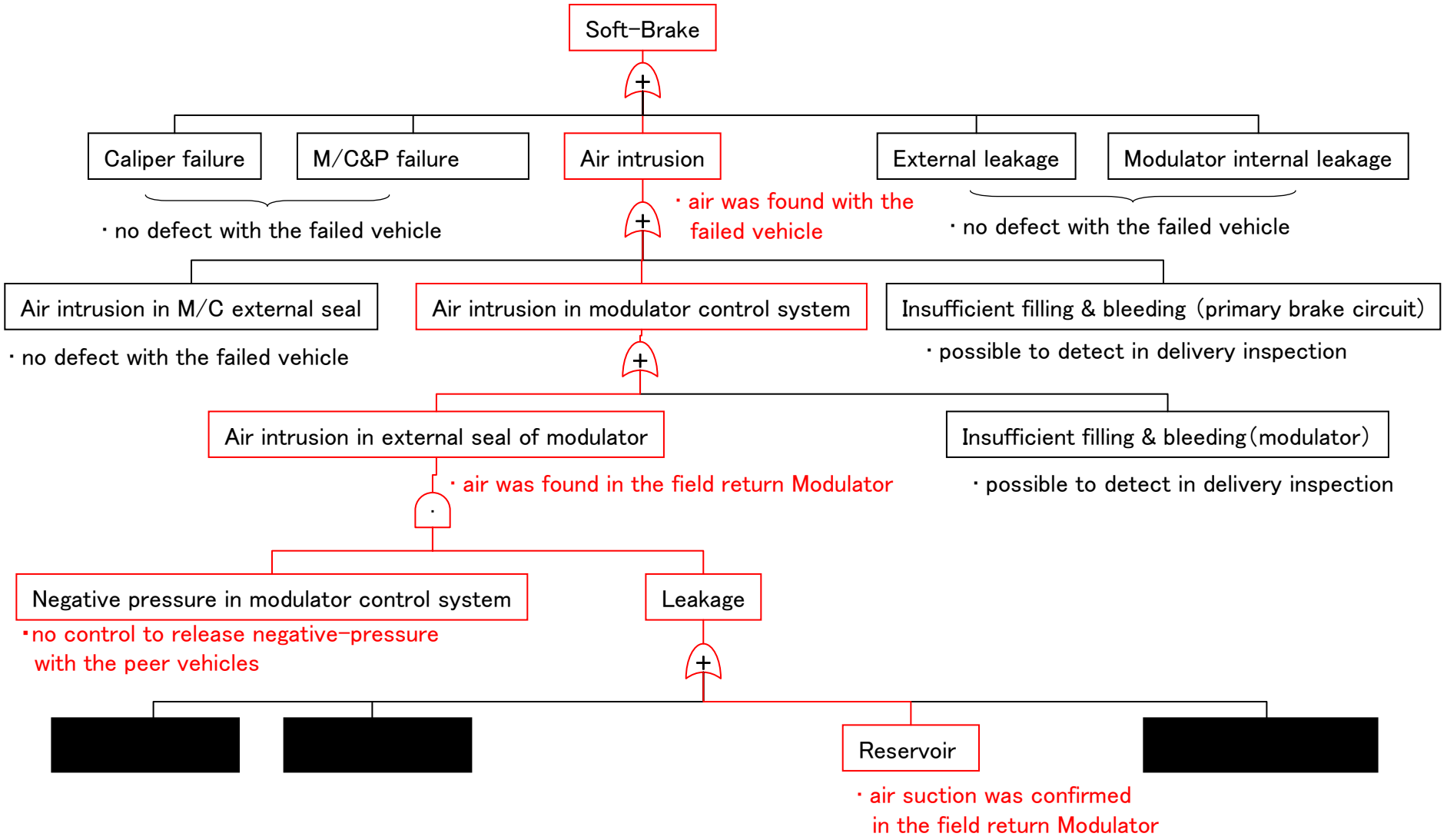

1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)
Confirmation result
Judgment
leakage from suction damper
A
[redacted]
Assembly
Dimension / Roughness
Material
[redacted]
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification *
Dimension is within specification *
Roughness is within specification *
Composition and characteristics are within specification *
Composition and characteristics are within specification *
○
Specific factor could not be found
* result from production sample and/or inspection certificate

Q12c


1) Subject vehicles (ODYSSEY), Peer vehicles (ELEMENT)
Confirmation result
Judgment
leakage from suction damper
B
[redacted]
Assembly
Dimension / Roughness
Material
[redacted]
Both force are within specification *
Force is within specification *
No contamination were found in returned parts
Dimension is within specification
Dimension is within specification
Dimension is within specification
Dimension is within specification
Roughness is within specification
Dimension is within specification
Dimension is within specification
Composition and characteristics are within specification *
Characteristics are within specification
Composition and characteristics are within specification *
○
Specific factor could not be found
* result from production sample and/or inspection certificate

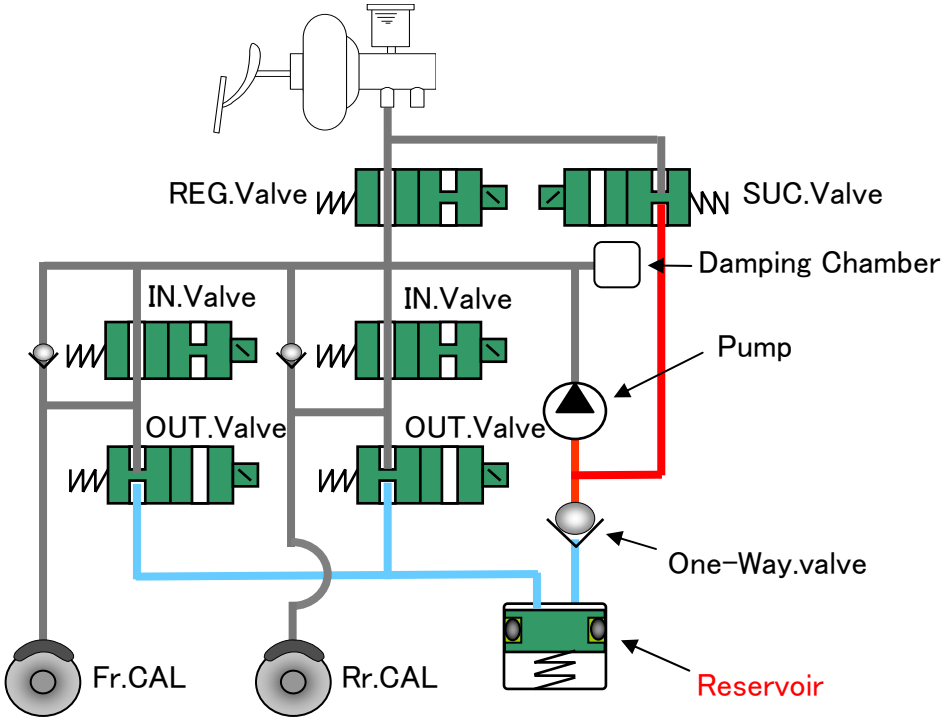
Q12c

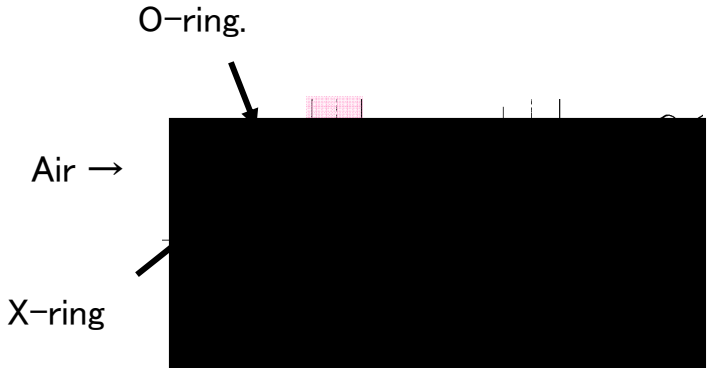
2) Peer vehicles (ACCORD)



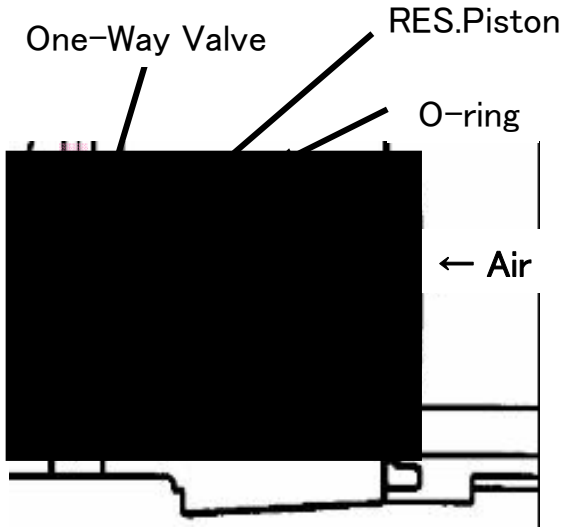
Q12c

2) Peer vehicles (ACCORD)





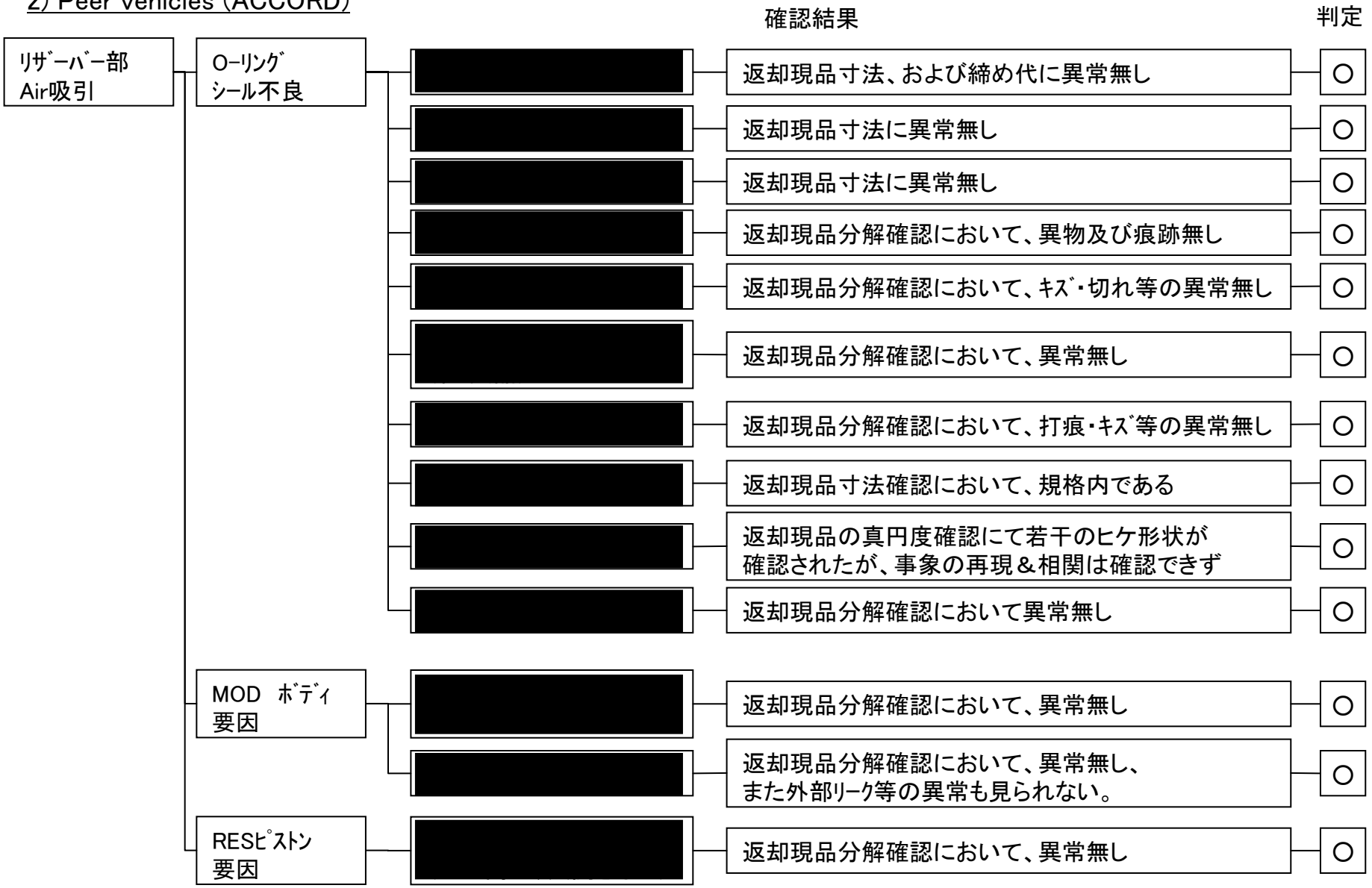
Pump



Reservoir

Q12c

2) Peer vehicles (ACCORD)



Specific factor could not be found

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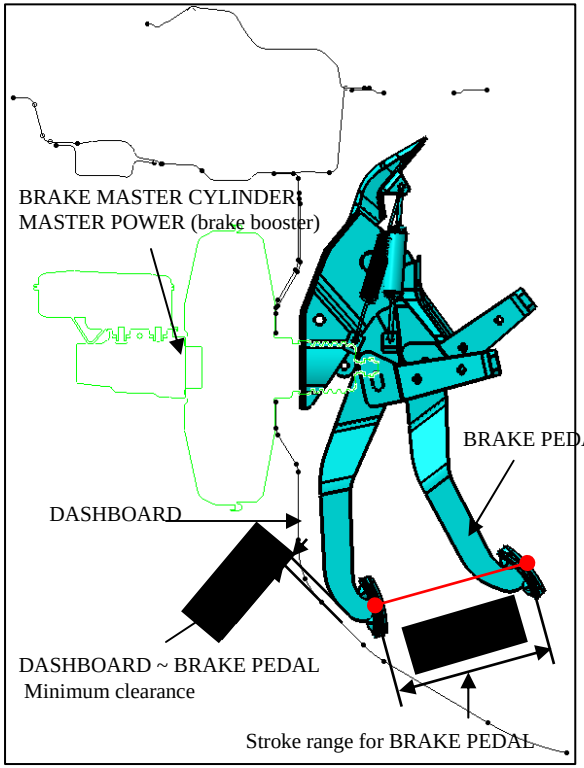
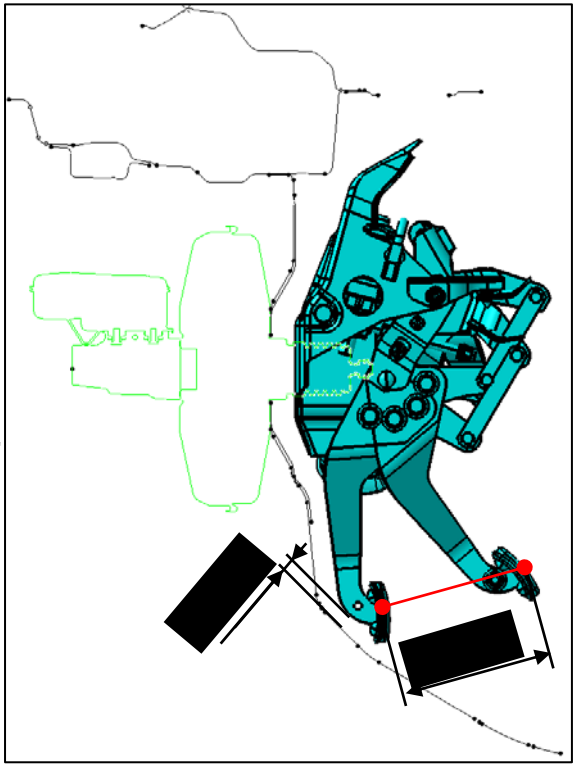
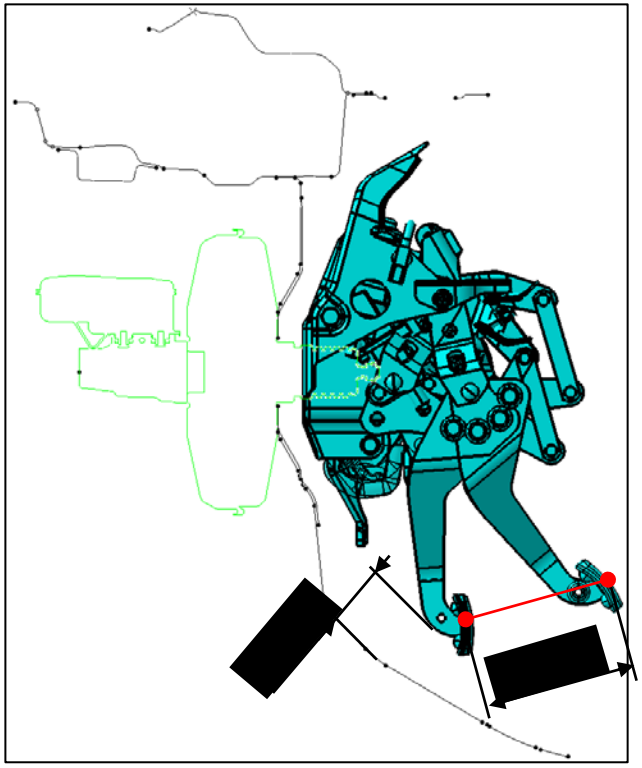
Q12D E

Q12d

Type A (Grade ; VAN, LX, EX, EXL)	Type B (Grade ; EXL-Touring)	
	Adjustment at the lower extent of brake pedal	Adjustment at the higher extent of brake pedal







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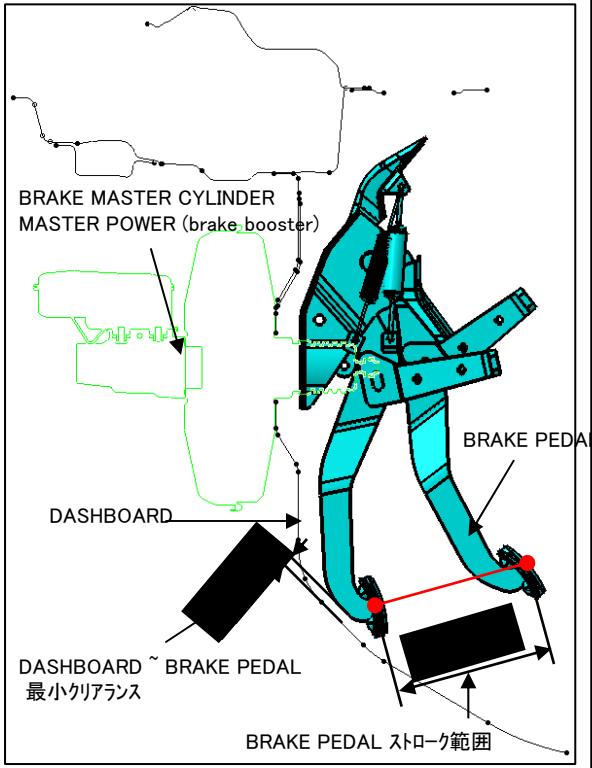
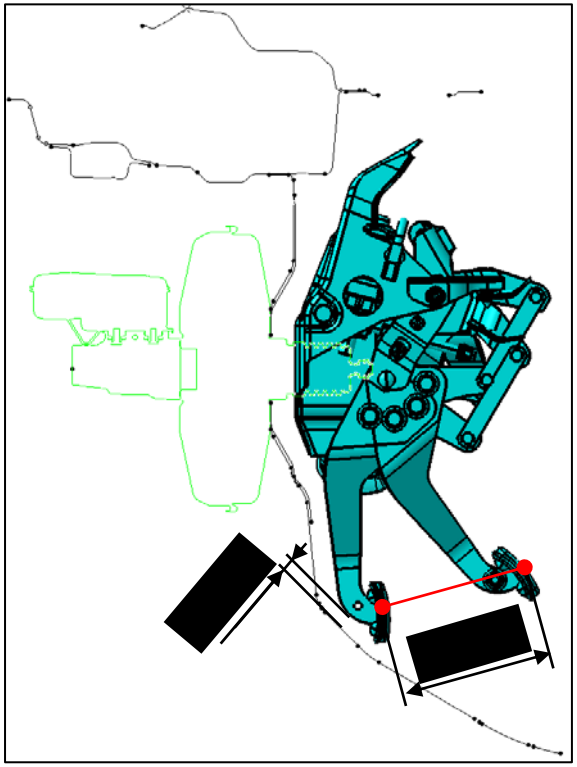
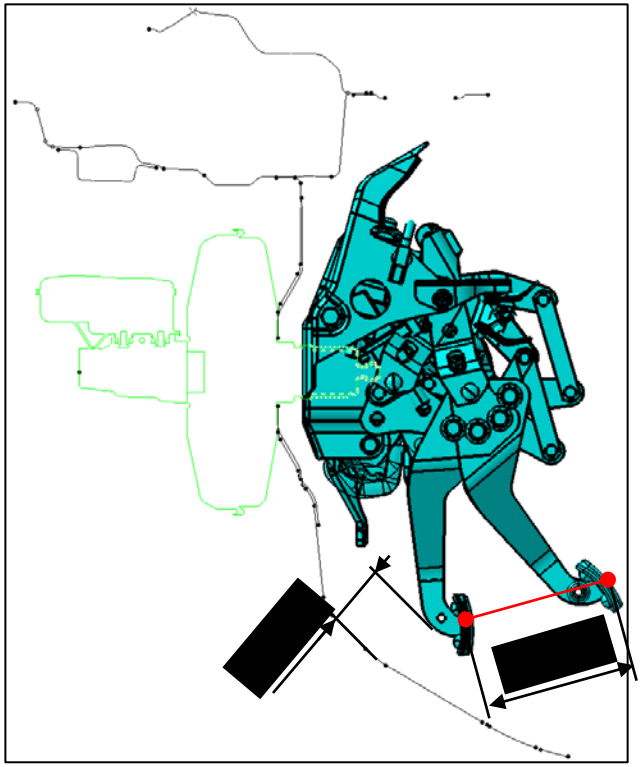
Q12D J

Q12d

Type A (Grade ; VAN, LX, EX, EXL)	Type B (Grade ; EXL-Touring)	
	ブレーキペダル 最下方アジャスト時	ブレーキペダル 最上方アジャスト時
		

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Q12E E

Q12e

Test Vehicle

Vehicle		US ODYSSEY (PEDAL Type B)
F No.		[redacted]
Tire (size)		MICHELIN ENERGY LX4 (235/65R16)
weight	LLVW (Fr/Rr)	2222 (1239 / 983) kg
	GVWR (Fr/Rr)	2707 (1291 / 1416) kg

Q12e

(2) A typical amount of air leakage into the brake system due to the subject service bulletin condition
: An average value for air residual amount of field return part ＝1．5cc was set as the typical amount of air leakage
(3)A worst case amount of air leakage into the brake system due to subject service bulletin condition
:A worst case value for air residual amount of field return part＝2．7cc was set as the typical amount of air leakage

[redacted]

Total air amount for MOD

Air residual amount (N=18 units)

[redacted]	Air Removed from High Pressure Circuit by Super Bleed [cc]	Vehicle Id.Number
[redacted]	0.3	[redacted]
[redacted]	0.2	
[redacted]	2.4	
[redacted]	1.6	
[redacted]	2.1	
[redacted]	2.4	
[redacted]	0.8	
[redacted]	2.7	
[redacted]	2.1	
[redacted]	0.6	
[redacted]	2.7	
[redacted]	0.6	
[redacted]	1.1	
[redacted]	0.9	
[redacted]	1.7	
[redacted]	1.7	
[redacted]	1.9	
[redacted]	1.5	
16.7	1.6	5FNRL38667B428756

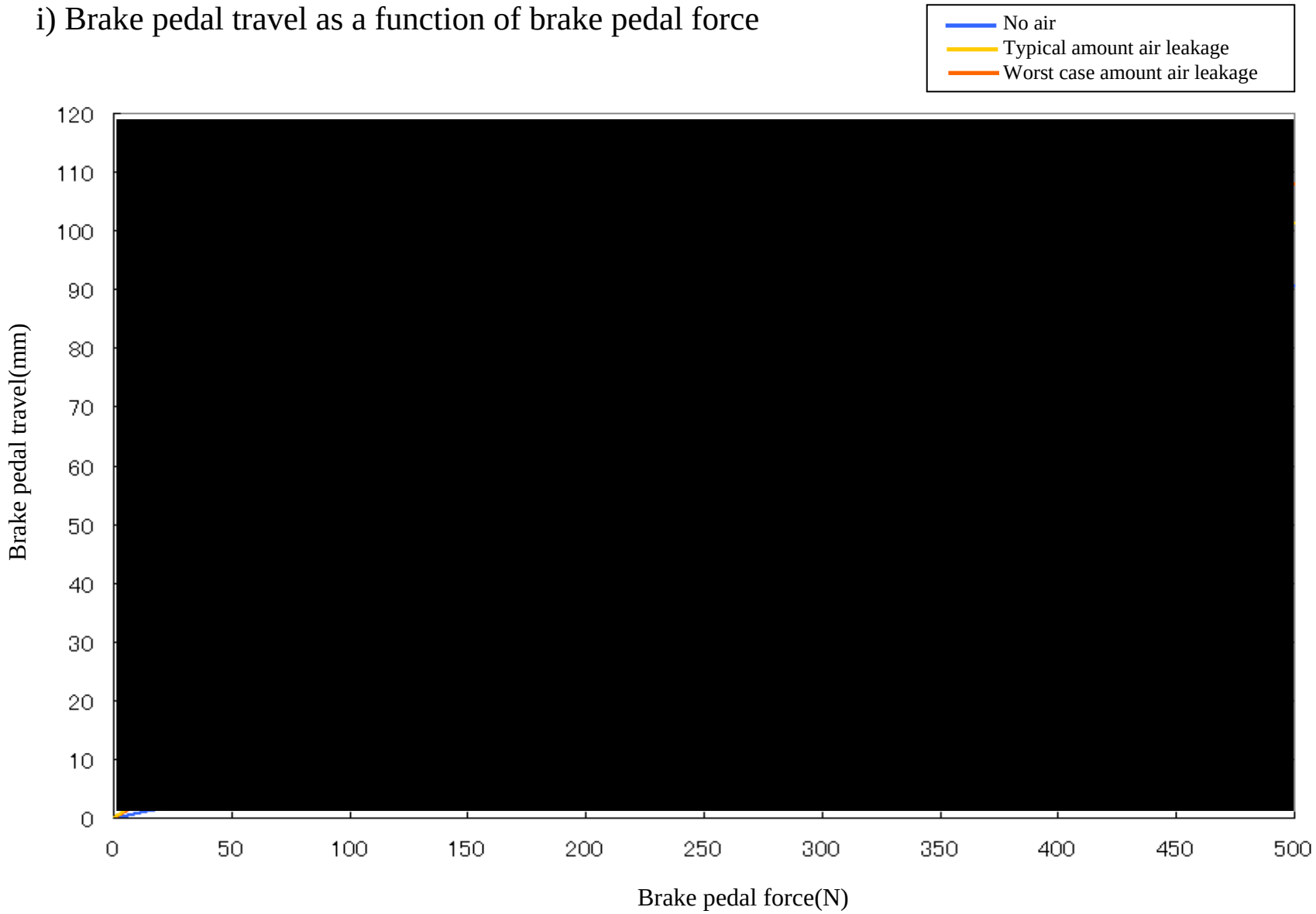
[redacted]

Air residual amount is 0.3-2.7 cc.

[redacted]

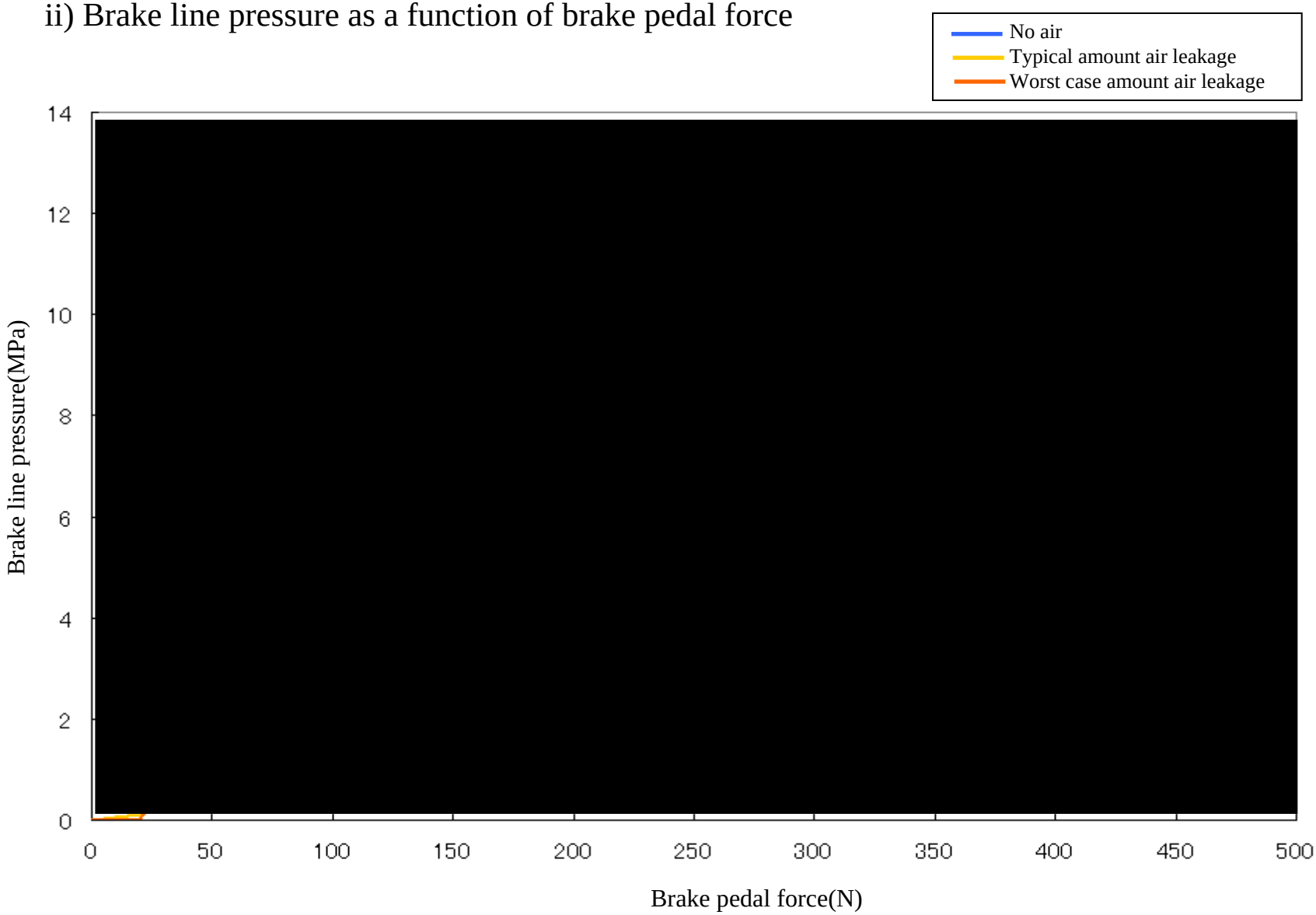
Q12e

i) Brake pedal travel as a function of brake pedal force



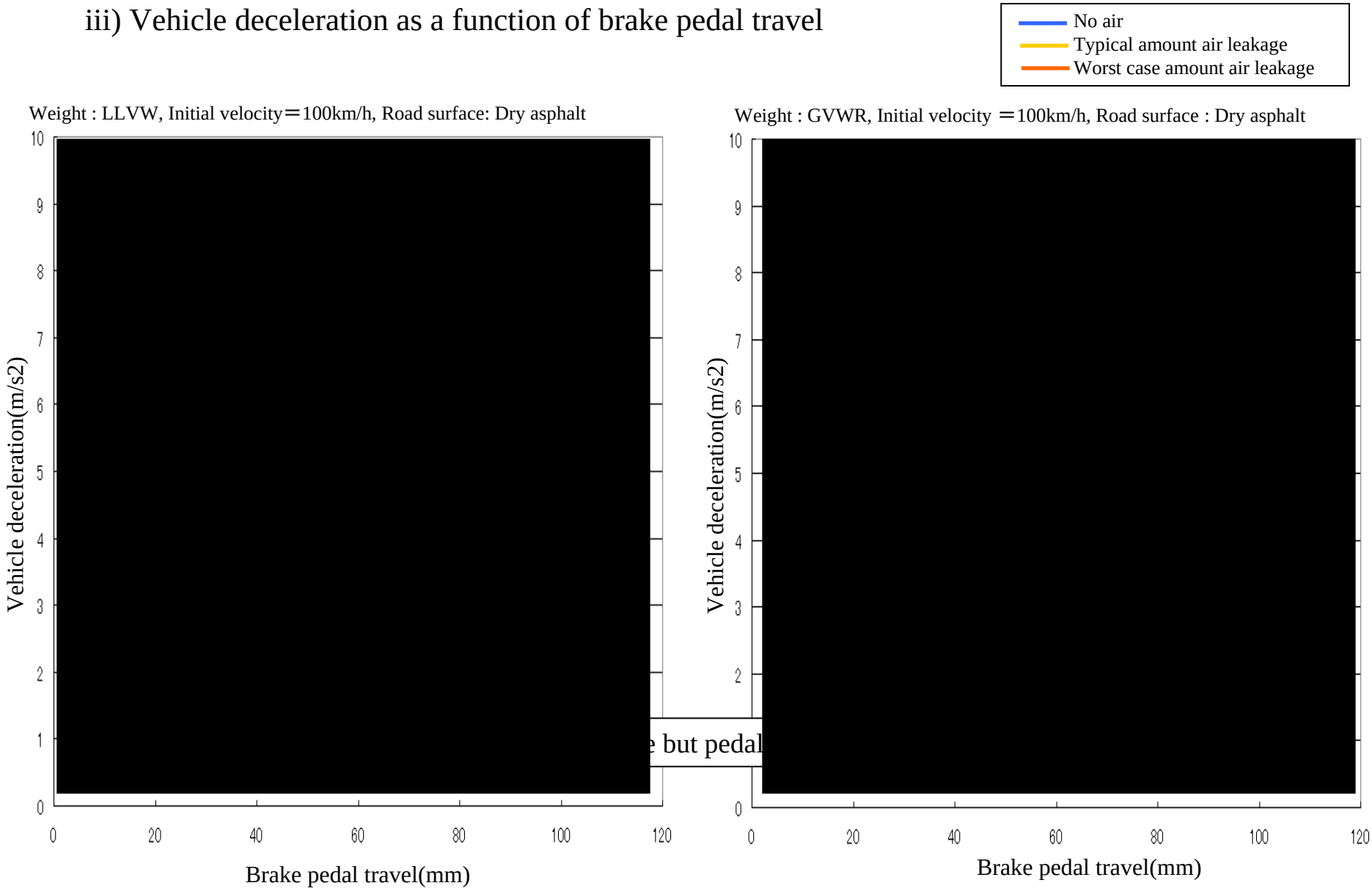
Q12e

ii) Brake line pressure as a function of brake pedal force



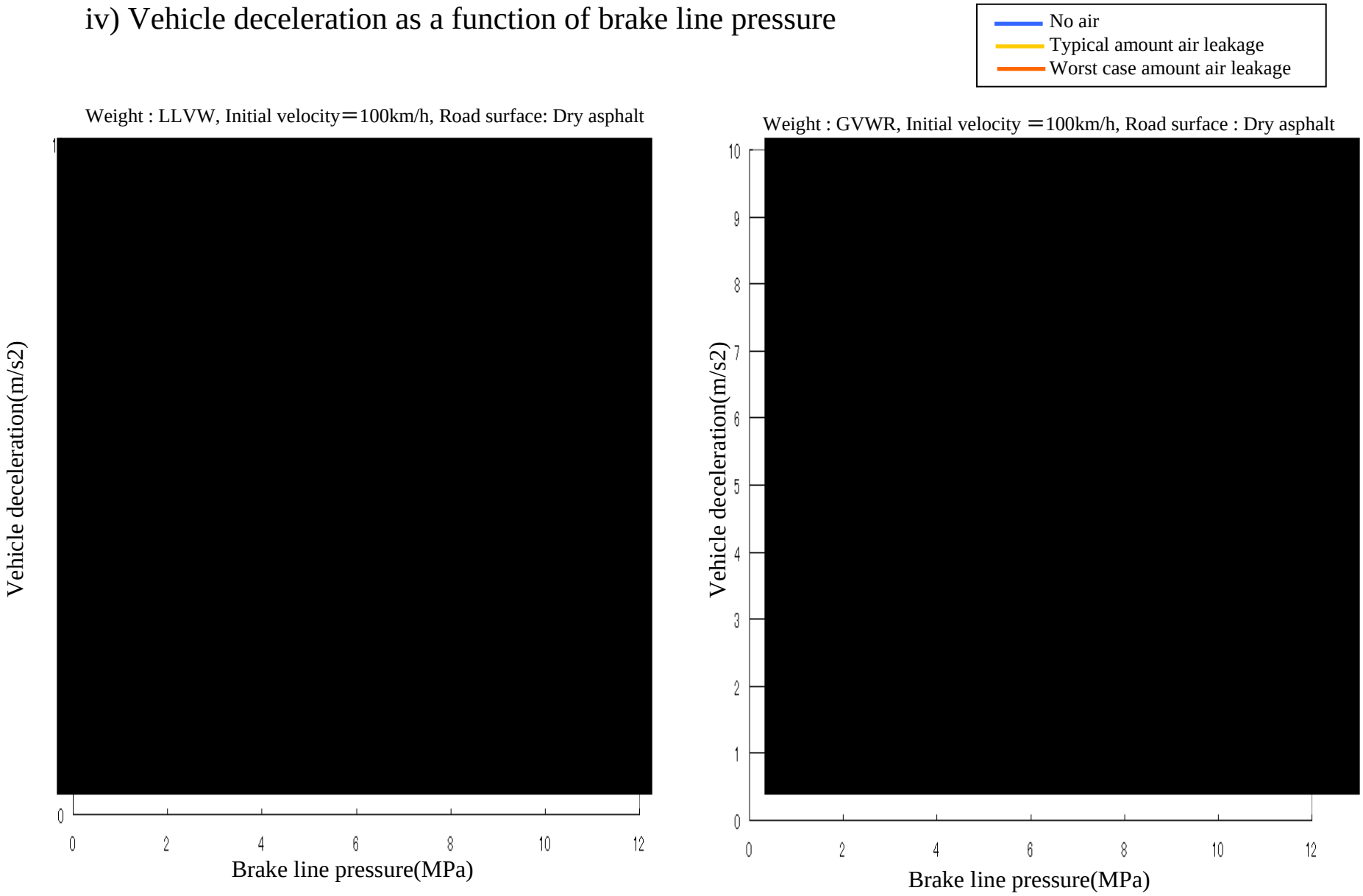
Q12e

iii) Vehicle deceleration as a function of brake pedal travel



Q12e

iv) Vehicle deceleration as a function of brake line pressure



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Q12E J

Q12e

Test Vehicle

Vehicle		US ODYSSEY (PEDAL Type B)
F No.		[redacted]
Tire (size)		MICHELIN ENERGY LX4 (235/65R16)
weight	LLVW (Fr/Rr)	2222 (1239 / 983) kg
	GVWR (Fr/Rr)	2707 (1291 / 1416) kg

Q12e

(2) 対象サービスブリテンの状態によるブレーキシステムへの典型的なエア漏れ量
：市場返却品のエア残留量の平均値＝1．5ccを典型的なエア漏れ量とした。

(3) 対象サービスブリテンの状態によるブレーキシステムへの最悪のケースのエア漏れ量
：市場返却品のエア残留量の最悪値＝2．7ccを最悪ケースのエア漏れ量とした。

[redacted]

MOD全体 エア量

エア残留量 (N=18台)

[redacted]	Air Removed from High Pressure Circuit by Super Bleed [cc]	Vehicle Id.Number
[redacted]	0.3	[redacted]
	0.2	
	2.4	
	1.6	
	2.1	
	2.4	
	0.8	
	2.7	
	2.1	
	0.6	
	2.7	
	0.6	
	0.9	
	1.7	
	1.7	
	1.9	
	1.5	
	1.6	

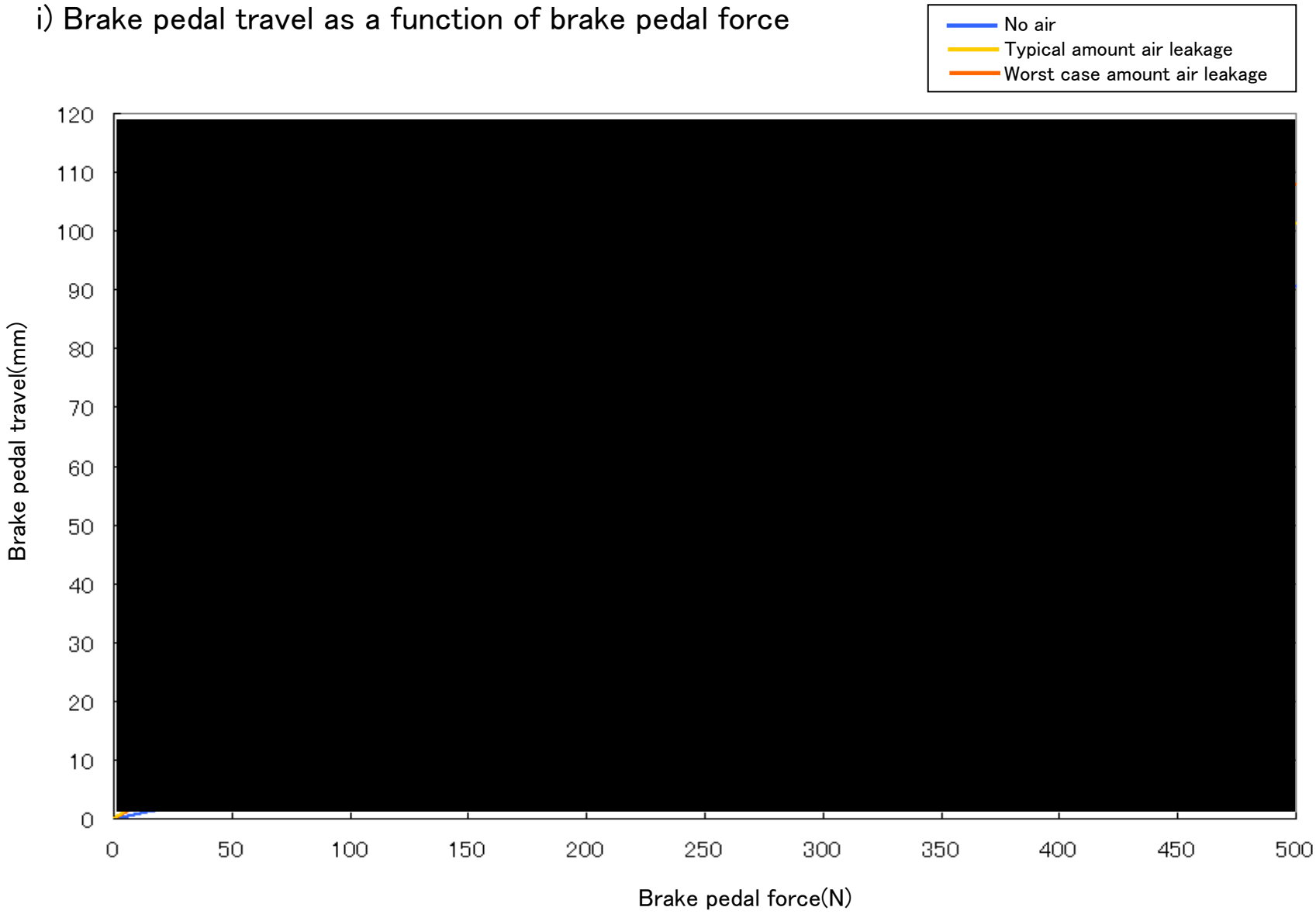
[redacted]

エア残留有0.2～2.7 cc

[redacted]

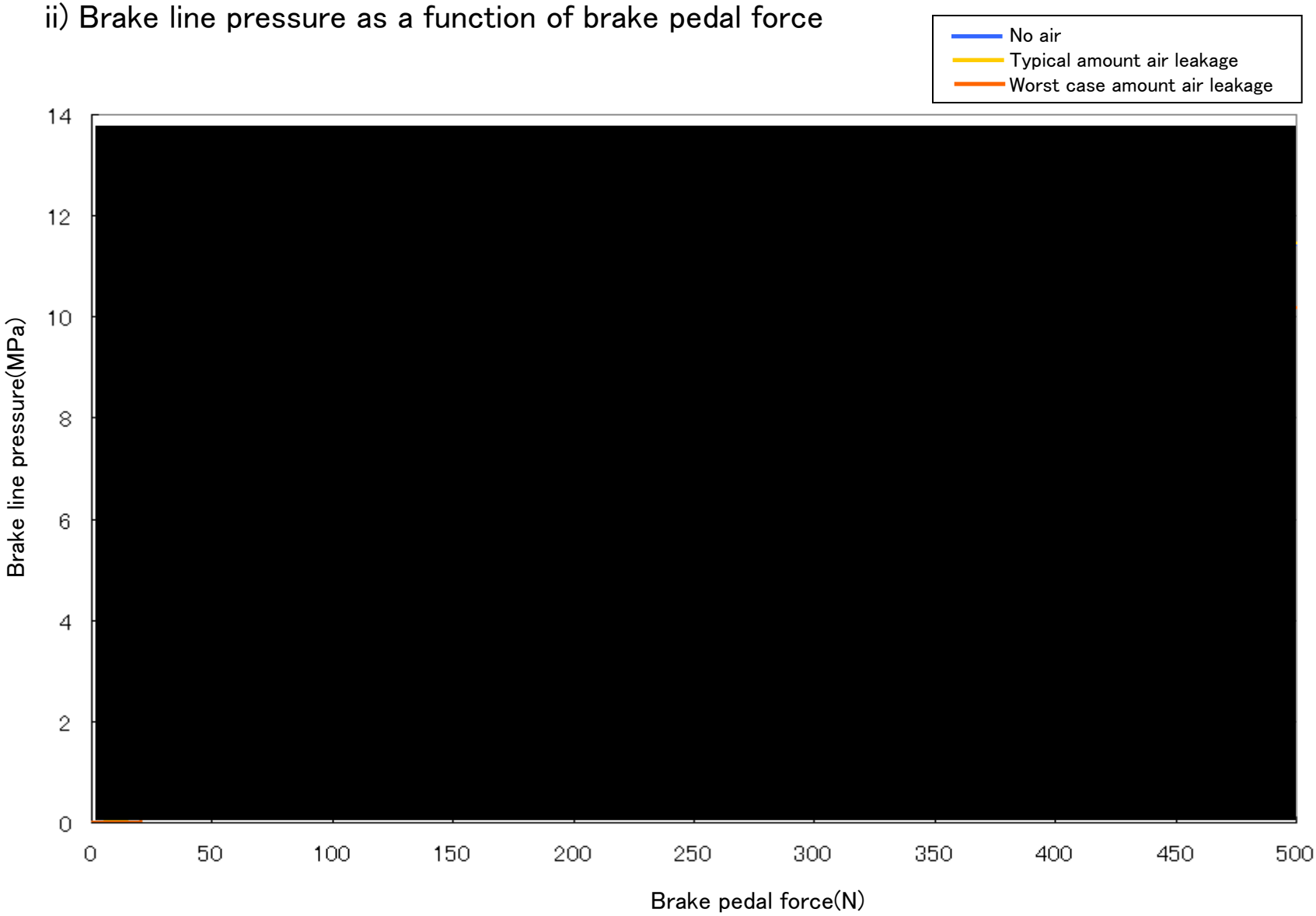
Q12e

i) Brake pedal travel as a function of brake pedal force



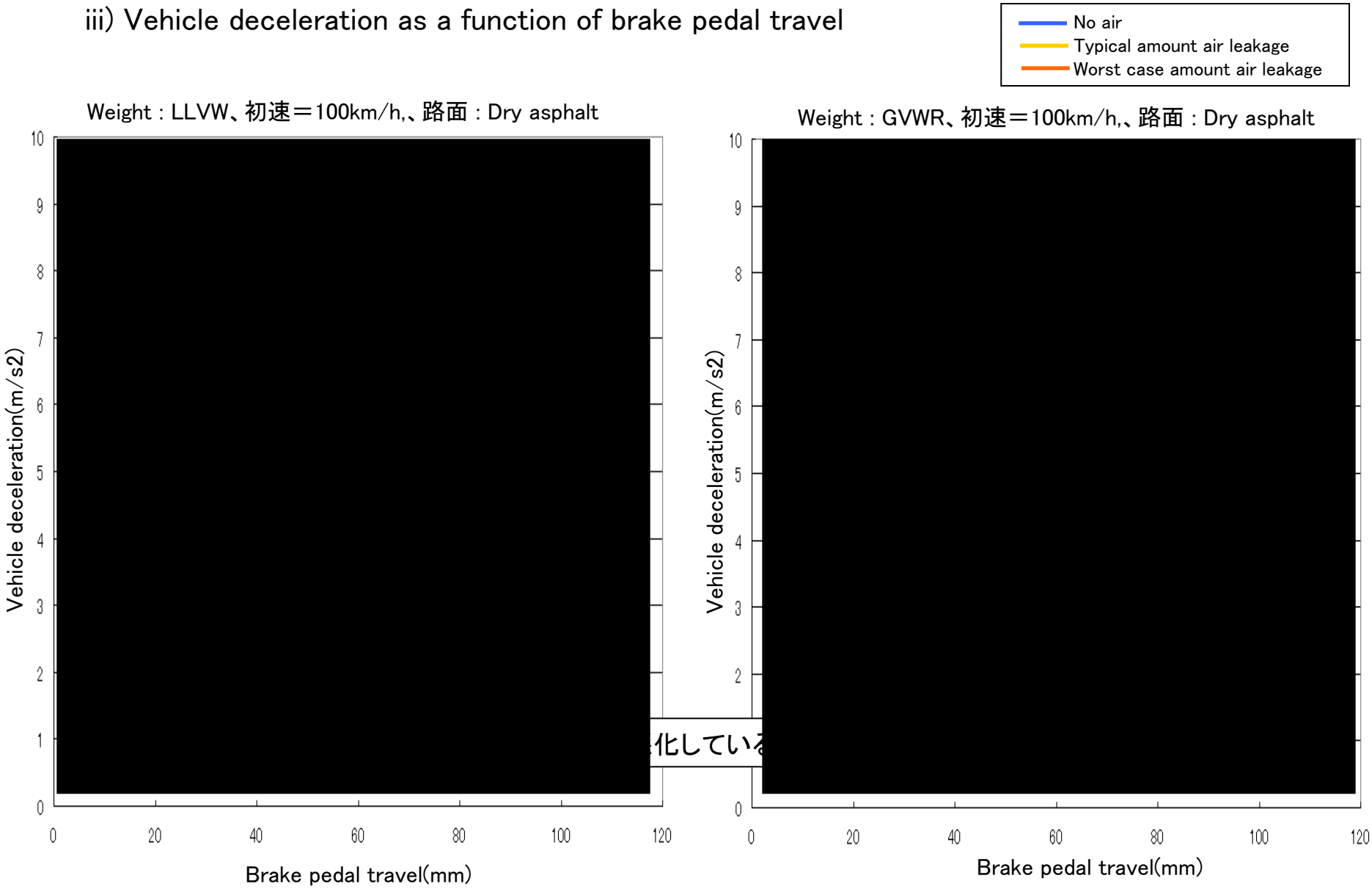
Q12e

ii) Brake line pressure as a function of brake pedal force



Q12e

iii) Vehicle deceleration as a function of brake pedal travel



Q12e

iv) Vehicle deceleration as a function of brake line pressure