

LCM  
LCR  
LCG  
LCW  
LCX  
STM  
STG  
STS・STL  
STR2  
UCA2  
ULK※  
JSK/M2  
JSG  
JSC3・JSC4  
USSD  
UFCD  
USC  
UB  
JSB3  
LMB  
LML  
HCM  
HCA  
LBC  
CAC4  
UCAC2  
CAC-N  
UCAC-N  
RCS2  
RCC2  
PCC  
SHC  
MCP  
GLC  
MFC  
BBS  
RRC  
GRC  
RV3※  
NHS  
HRL  
LN  
卡爪  
卡盘  
机械卡爪・卡盘  
缓冲器  
FJ  
FK  
速度控制器  
卷末

选型

使用高速型气缸时，请尤其注意气缸速度和动能。

步骤1 高速型气缸的选型

气缸使用压缩性流体，因此平均速度和缓冲介入最高速度不同。  
需使负荷W以平均速度V1动作时，根据下表计算所需合成有效截面积S和最高速度V。  
该表仅供参考，数值会因负荷方向、配管长度等略有差异。

基于高速型气缸负荷率的平均速度和最高速度(气压=0.5MPa时)

| 缸径(mm)             | 平均速度<br>负荷率 | V1=500mm/s |      |      | V1=1,000mm/s |       |       | V1=2,000mm/s |       |       |
|--------------------|-------------|------------|------|------|--------------|-------|-------|--------------|-------|-------|
|                    |             | 10%        | 20%  | 30%  | 10%          | 20%   | 30%   | 10%          | 20%   | 30%   |
| φ20<br>(A2=2.356)  | W           | 1.57       | 3.14 | 4.71 | 1.57         | 3.14  | 4.71  | 1.57         | 3.14  | 4.71  |
|                    | S           | 0.80       | 0.89 | 0.98 | 1.60         | 1.78  | 1.96  | 3.19         | 3.56  | 3.93  |
|                    | V           | 630        | 689  | 714  | 1,260        | 1,378 | 1,482 | 2,512        | 2,756 | 2,971 |
| φ25<br>(A2=3.778)  | W           | 2.45       | 4.91 | 7.36 | 2.45         | 4.91  | 7.36  | 2.45         | 4.91  | 7.36  |
|                    | S           | 1.28       | 1.43 | 1.57 | 2.56         | 2.85  | 3.15  | 5.12         | 5.71  | 6.30  |
|                    | V           | 628        | 690  | 740  | 1,257        | 1,376 | 1,485 | 2,514        | 2,757 | 2,970 |
| φ32<br>(A2=6.912)  | W           | 4.02       | 8.04 | 12.1 | 4.02         | 8.04  | 12.1  | 4.02         | 8.04  | 12.1  |
|                    | S           | 2.34       | 2.61 | 2.88 | 4.68         | 5.22  | 5.76  | 9.36         | 12.4  | 11.5  |
|                    | V           | 630        | 692  | 747  | 1,261        | 1,383 | 1,494 | 2,521        | 2,758 | 2,983 |
| φ40<br>(A2=10.56)  | W           | 6.28       | 12.6 | 18.8 | 6.28         | 12.6  | 18.8  | 6.28         | 12.6  | 18.8  |
|                    | S           | 3.57       | 3.99 | 4.40 | 7.15         | 7.97  | 8.80  | 14.3         | 15.9  | 17.6  |
|                    | V           | 630        | 693  | 747  | 1,261        | 1,383 | 1,494 | 2,521        | 2,765 | 2,988 |
| φ50<br>(A2=16.49)  | W           | 9.82       | 19.6 | 29.5 | 9.82         | 19.6  | 29.5  | 9.82         | 19.6  | 29.5  |
|                    | S           | 5.58       | 6.23 | 6.87 | 11.2         | 12.5  | 13.7  | 22.3         | 24.9  | 27.5  |
|                    | V           | 630        | 693  | 747  | 1,265        | 1,389 | 1,490 | 2,518        | 2,768 | 2,990 |
| φ63<br>(A2=28.03)  | W           | 15.6       | 31.2 | 46.8 | 15.6         | 31.2  | 46.8  | 15.6         | 31.2  | 46.8  |
|                    | S           | 9.49       | 10.6 | 11.7 | 19.0         | 21.2  | 23.4  | 38.0         | 42.3  | 46.7  |
|                    | V           | 632        | 694  | 749  | 1,266        | 1,389 | 1,498 | 2,531        | 2,771 | 2,989 |
| φ80<br>(A2=45.36)  | W           | 25.1       | 50.3 | 75.4 | 25.1         | 50.3  | 75.4  | 25.1         | 50.3  | 75.4  |
|                    | S           | 15.4       | 17.1 | 18.9 | 30.7         | 34.3  | 37.8  | 61.4         | 68.5  | 75.6  |
|                    | V           | 634        | 692  | 744  | 1,264        | 1,388 | 1,495 | 2,527        | 2,773 | 2,990 |
| φ100<br>(A2=71.47) | W           | 39.3       | 78.5 | 118  | 39.3         | 78.5  | 118   | 39.3         | 78.5  | 118   |
|                    | S           | 24.2       | 27.0 | 29.8 | 48.4         | 54.0  | 59.6  | 96.8         | 108   | 119   |
|                    | V           | 632        | 694  | 748  | 1,264        | 1,387 | 1,496 | 2,529        | 2,774 | 2,987 |

W：负荷重量(kg) S：合成有效截面积(mm<sup>2</sup>) V：最高速度(mm/s) V1：平均速度(mm/s) A2：前端截面积(cm<sup>2</sup>)

例如使用HCA-40时，负荷6.28kgf(负荷率10%、0.5MPa)时若平均速度V1=2,000mm/s，则最高速度为1.26倍的2,521mm/s。此时的所需合成有效截面积为14.3mm<sup>2</sup>。

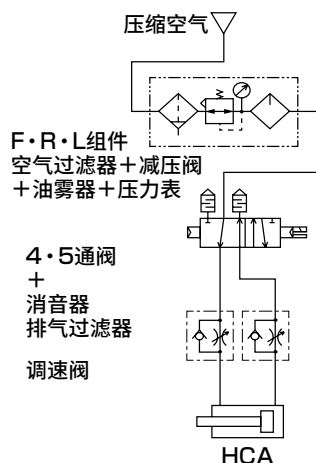
与合成有效截面积相符的系统元件请从下页表格中选择。

## 系统选型指南表

根据各缸径，选择与指定的气缸速度相符的最佳系统。

| 缸径   | 配管口径  | 必要有效<br>截面积(mm <sup>2</sup> ) | 气动控制用4.5通阀                                   |                                              | 空压辅助元件          |         | 配管                 |
|------|-------|-------------------------------|----------------------------------------------|----------------------------------------------|-----------------|---------|--------------------|
|      |       |                               | 单电控                                          | 双电控                                          | 调速阀             | 消音器     | 配管(/m)<br>(阀·气缸之间) |
| φ20  | Rc1/8 | 1.3                           | 4KA110-M5·4KB110-06<br>4GA110R-M5·4GB110R-06 | 4KA120-M5·4KB120-06<br>4GA120R-M5·4GB120R-06 | SC3W-6·SC3R-6   | SLW-6A  | φ4×2.5NT           |
|      |       | 2.0                           | 4KA110-M5·4KB110-06<br>4GA110R-M5·4GB110R-06 | 4KA120-M5·4KB120-06<br>4GA120R-M5·4GB120R-06 | SC3R-6          | SLW-6A  | φ6×φ4NT            |
|      |       | 2.8                           | 4KA210-06·4KB210-06<br>4GA210R-06·4GB210R-08 | 4KA220-06·4KB220-06<br>4GA220R-06·4GB220R-08 | SC3R-6          | SLW-6A  | φ8×φ5.7NT          |
|      |       | 3.6                           | 4KA210-06·4KB210-06<br>4GA210R-06·4GB210R-08 | 4KA220-06·4KB220-06<br>4GA220R-06·4GB220R-08 | SC1-6           | SLW-6A  | φ6×φ4NT            |
|      |       | 4.3                           | 4KA210-06·4KB210-06<br>4GA210R-06·4GB210R-08 | 4KA220-06·4KB220-06<br>4GA220R-06·4GB220R-08 | SC1-6           | SLW-6A  | φ8×φ5.7NT          |
| φ25  | Rc1/8 | 1.4                           | 4KA110-M5·4KB110-06<br>4GA110R-M5·4GB110R-06 | 4KA120-M5·4KB120-06<br>4GA120R-M5·4GB120R-06 | SC3W-6          | SLW-6A  | φ4×φ2.5NT          |
|      |       | 2.4                           | 4KA110-M5·4KB110-06<br>4GA110R-M5·4GB110R-06 | 4KA120-M5·4KB120-06<br>4GA120R-M5·4GB120R-06 | SC3W-6          | SLW-6A  | φ6×φ4NT            |
|      |       | 4.4                           | 4KA210-06·4KB210-06<br>4GA210R-06·4GB210R-08 | 4KA220-06·4KB220-06<br>4GA220R-06·4GB220R-08 | SC1-6           | SLW-6A  | φ6×φ4NT            |
|      |       | 5.8                           | 4KA210-06·4KB210-06<br>4GA210R-06·4GB210R-08 | 4KA220-06·4KB220-06<br>4GA220R-06·4GB220R-08 | SC1-6           | SLW-6A  | φ8×φ5.7NT          |
|      |       | 6.6                           | 4KA210-06·4KB210-06<br>4GA210R-06·4GB210R-08 | 4KA220-06·4KB220-06<br>4GA220R-06·4GB220R-08 | SC1-8           | SLW-6A  | φ10×φ7.2NT         |
| φ32  | Rc1/4 | 3.6                           | 4KB210-08·4GB210R-08                         | 4KB220-08·4GB220R-08                         | SC3W-8·SC3R-8   | SLW-8A  | φ6×φ4NT            |
|      |       | 5.9                           | 4KB210-08·4GB210R-08                         | 4KB220-08·4GB220R-08                         | SC1-8           | SLW-8A  | φ8×φ5.7NT          |
|      |       | 8.4                           | 4F210-08·4KB310-08<br>4GB310R-08             | 4F220-08·4KB320-08<br>4GB320R-08             | SC1-8           | SLW-8A  | φ10×φ7.2NT         |
|      |       | 9.5                           | 4KB310-08·4F310-08<br>4GB310R-08             | 4KB320-08·4F320-08<br>4GB320R-08             | SC1-8           | SLW-8A  | φ10×φ7.2NT         |
|      |       | 11.6                          | 4F310-08·4F410-08<br>4GB310R-08              | 4F320-08·4F420-08<br>4GB320R-08              | SC3W-10·SC3R-10 | SLW-8A  | φ12×φ8.9NT         |
| φ40  | Rc1/4 | 3.6                           | 4KB210-08·4GB310R-08                         | 4KB220-08·4GB320R-08                         | SC3W-8·SC3R-8   | SLW-8A  | φ6×φ4NT            |
|      |       | 8.5                           | 4F210-08·4KB310-08<br>4GB310R-08             | 4F220-08·4KB320-08<br>4GB320R-08             | SC1-8           | SLW-8A  | φ10×φ7.2NT         |
|      |       | 12.0                          | 4F310-08·4F410-08<br>4GB310R-08              | 4F320-08·4F420-08<br>4GB320R-08              | SC3W-10·SC3R-10 | SLW-8A  | φ12×φ8.9NT         |
|      |       | 15.2                          | 4F410-08                                     | 4F420-08                                     | SC1-10          | SLW-8A  | φ12×φ8.9NT         |
|      |       | 18.4                          | 4F510-10                                     | 4F520-10                                     | SC1-10          | SLW-10A | φ15×φ11.5NT        |
| φ50  | Rc3/8 | 5.5                           | 4KB310-10·4F310-10                           | 4KB320-10·4F320-10                           | SC3W-10·SC3R-10 | SLW-10A | φ6×φ4NT            |
|      |       | 12.0                          | 4K310-10·4F310-10                            | 4K320-10·4F320-10                            | SC3W-10·SC3R-10 | SLW-10A | φ12×φ8.9NT         |
|      |       | 18.1                          | 4F510-10                                     | 4F520-10                                     | SC1-10          | SLW-10A | φ12×φ8.9NT         |
|      |       | 23.5                          | 4F510-10                                     | 4F520-10                                     | SC1-15          | SLW-10A | φ15×φ11.5NT        |
|      |       | 26.9                          | 4F610-15                                     | 4F620-15                                     | SC1-15          | SLW-15A | φ15×φ11.5NT        |
| φ63  | Rc3/8 | 11.0                          | 4K310-10·4F310-10                            | 4K320-10·4F320-10                            | SC3W-10·SC3R-10 | SLW-10A | φ10×φ7.2NT         |
|      |       | 18.0                          | 4K410-10·4F510-10                            | 4K420-10·4F520-10                            | SC1-10          | SL-10A  | φ10×φ7.2NT         |
|      |       | 26.9                          | 4F610-15                                     | 4F620-15                                     | SC1-15          | SLW-15A | φ10×φ8.9NT         |
|      |       | 43.1                          | 4F610-15                                     | 4F620-15                                     | SC-20A          | SLW-15A | φ15×φ11.5NT        |
|      |       | 62.8                          | 4F610-20                                     | 4F620-20                                     | SC-20A          | SL-20A  | Rc1/2钢管            |
| φ80  | Rc1/2 | 19.5                          | 4F610-15                                     | 4F620-15                                     | SC3W-15·SC3R-15 | SLW-15A | φ12×φ8.9NT         |
|      |       | 31.3                          | 4F610-15                                     | 4F620-15                                     | SC1-15          | SLW-15A | φ15×φ11.5NT        |
|      |       | 67.4                          | 4F610-20                                     | 4F620-20                                     | SC-20A          | SL-20A  | Rc3/4钢管            |
|      |       | 85.9                          | 4F710-20                                     | 4F720-20                                     | SC-20A          | SL-20A  | Rc3/4钢管            |
|      |       | 95.9                          | 4F710-20                                     | 4F720-20                                     | SC-25A          | SL-20A  | Rc3/4钢管            |
| φ100 | Rc1/2 | 31.8                          | 4F610-15                                     | 4F620-15                                     | SC1-15          | SLW-15A | φ15×φ11.5NT        |
|      |       | 67.4                          | 4F610-20                                     | 4F620-20                                     | SC-20A          | SL-20A  | Rc3/4钢管            |
|      |       | 85.9                          | 4F710-20                                     | 4F720-20                                     | SC-20A          | SL-20A  | Rc3/4钢管            |
|      |       | 95.9                          | 4F710-20                                     | 4F720-20                                     | SC-25A          | SL-20A  | Rc3/4钢管            |
|      |       | 109.9                         | 4F710-25                                     | 4F720-25                                     | SC-25A          | SL-25A  | Rc3/4钢管            |

## ● 气动基本回路图

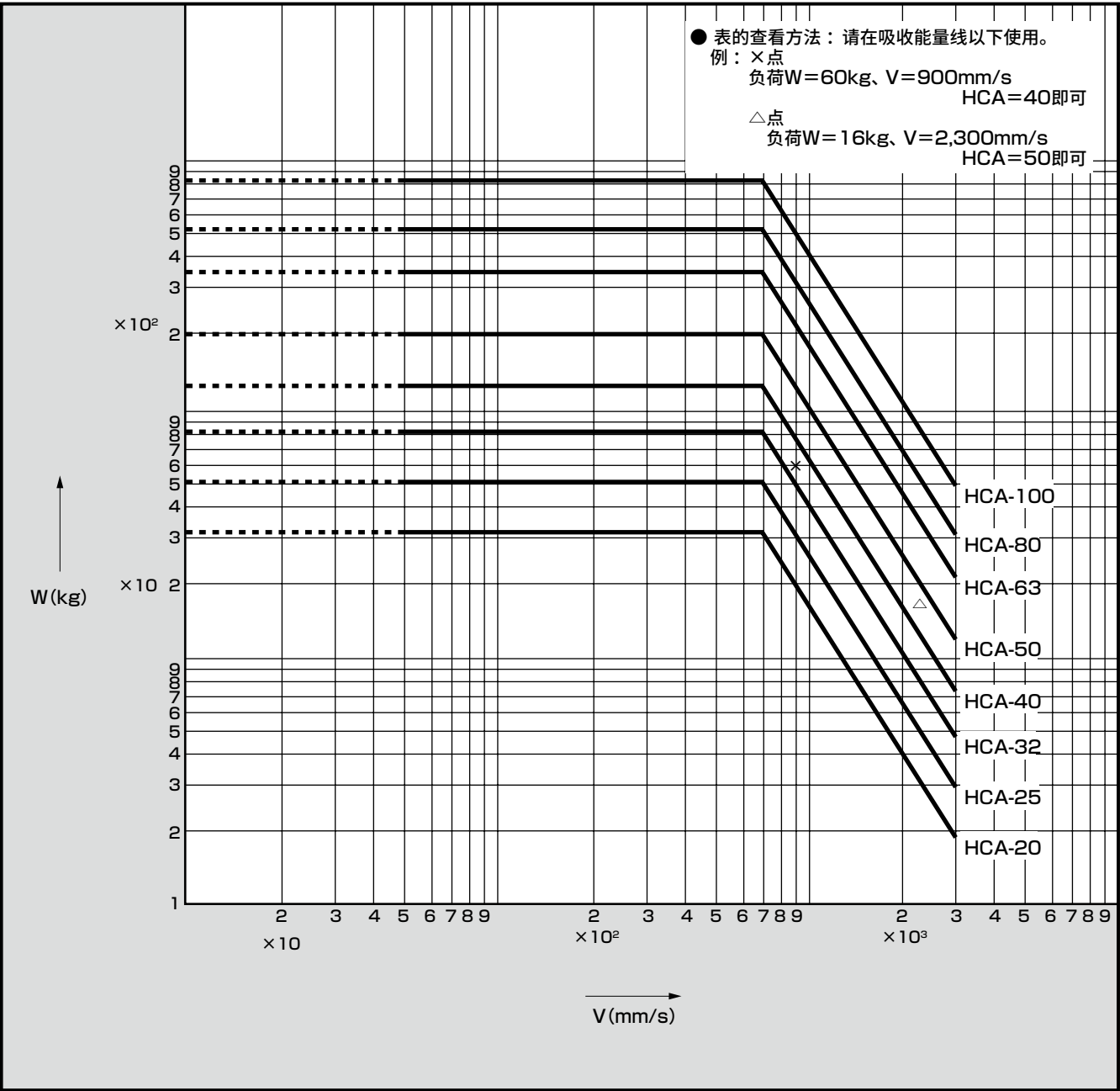


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| LCM       |
| LCR       |
| LCG       |
| LCW       |
| LCX       |
| STM       |
| STG       |
| STS・STL   |
| STR2      |
| UCA2      |
| ULK※      |
| JSK/M2    |
| JSG       |
| JSC3・JSC4 |
| USSD      |
| UFCD      |
| USC       |
| UB        |
| JSB3      |
| LMB       |
| LML       |
| HCM       |
| HCA       |
| LBC       |
| CAC4      |
| UCAC2     |
| CAC-N     |
| UCAC-N    |
| RCS2      |
| RCC2      |
| PCC       |
| SHC       |
| MCP       |
| GLC       |
| MFC       |
| BBS       |
| RRC       |
| GRC       |
| RV3※      |
| NHS       |
| HRL       |
| LN        |
| 卡爪        |
| 卡盘        |
| 机械卡爪・卡盘   |
| 缓冲器       |
| FJ        |
| FK        |
| 速度控制器     |
| 卷末        |

步骤2 高速型气缸的选型

根据负载W和最高速度V的关系，从下表中选择机种。

高速型气缸吸收能量一览表



注：为双对数图表，参阅时敬请注意。

例如负荷W=16kg、最高速度2,300mm/s时，△标记即HCA-40中无法使用，需使用HCA-50。