

Part number:

**HYDROMA**

HYDRAULICKÉ SYSTÉMY

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**HYDROMA**

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

## General Gear Pumps and Motors Technical Information

### Multi-Stage Pumps

Sauer-Danfoss multi-stage pumps can be combined of group 1, 2, and 3. In addition to the standard range (presented in the following), first stage can be supplied with a splined, a tapered or a parallel shaft. Also versions with suction connection and other hydraulic connections and flange assembly or centralized threads are available.

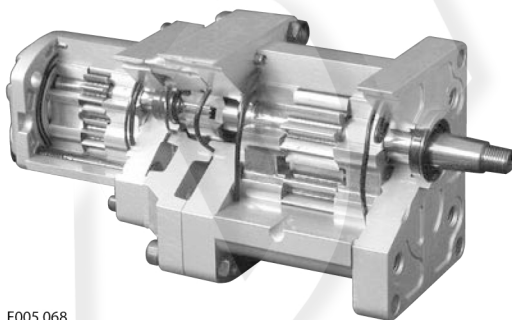
The representatives of Sauer-Danfoss multi-stage pumps are shown below:

*Tandem pump PTT SC46*



F005 011

*Tandem pump PNT CO31 (cut-away)*



F005 068

*Triple pump PFRN CO31*



F005 069

# General Gear Pumps and Motors

## Technical Information

### Multi-Stage Pumps

#### MULTI-STAGE PUMP MODEL CODE

*Example:*

**A B C D E F G H J K L M N O**  
**P N N T 1 9 + 1 1 + 4.3 D S C 3 1 W H O 1 G**

**A** Product = pump

**B** 1<sup>st</sup> stage group\*

**C** 2<sup>nd</sup> stage group\*

**D** 3<sup>rd</sup> stage group\*

Stage group code*	
<b>T</b>	= SNP1
<b>Y</b>	= SKP1
<b>N</b>	= SNP2
<b>L</b>	= SKP2
<b>R</b>	= SNP3

**E** Displacement of the 1<sup>st</sup> pump

**F** Displacement of the 2<sup>nd</sup> pump

**G** Displacement of the 3<sup>rd</sup> pump

**H** Direction of rotation

<b>D</b>	= right (clockwise)
<b>S</b>	= left (counterclockwise)

**J** Shaft type

**K** Spacer flange

**L** Front flange configuration

**M** Variant code

**N** Version

**O** Port type

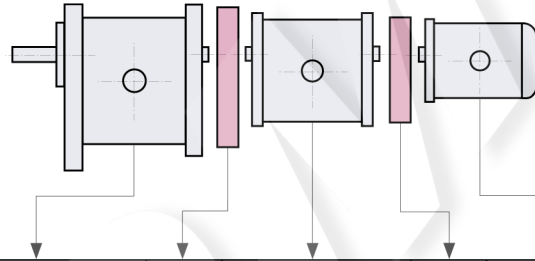
# General Gear Pumps and Motors

## Technical Information

### Multi-Stage Pumps

#### MULTI-STAGE PUMP MODEL CODE (continued)

Market codes for composition of multi-stage pumps



Compressed code	First stage	Kit	Middle stage	Kit	Rear stage
PTT ..+...CO41 ..._.	SNP1 /...CO41 ..._.	HT	-	-	SNP1/...SC11 ..._.
PTTT ..+...+...CO41 ..._.	SNP1/...CO41 ..._.	HT	SNP1/...SC71 ..._.	HV	SNP1/...SC11 ..._.
PLN ..+...CO41 ..._.	SKP2/...CO41 ..._.	-	-	-	SNP2/...FR03 ..._.
PLL ..+...TX41 ..._.	SKP2/...TX41 ..._.	-	-	-	SKP2/...FR03 ..._.
PNT ..+...CO31 ..._.	SNP2/...CO41 ...3.	HN	-	-	SNP1/...SC1C ..._.
PNTT ..+...+...CO31 ..._.	SNP2/...CO41 ...3.	HN	SNP1/...SC7C ..._.	HT	SNP1/...SC11 ..._.
PNN..+...CO41 ..._.	SNP2/...CO41 ..._.	-	-	-	SNP2/...FR03
PNNT ..+...+...CO31 ..._.	SNP2/...CO41 ...1.	-	SNP2/...FR73 ...3.	HN	SNP1/...SC1C ..._.
PNNN..+...+...CO41 ..._.	SNP2/...CO41 ..._.	-	SNP2/...FR73	-	SNP2/...FR03
PRT..+...CO31 ..._.	SNP3/...CO41 ..._.	HR	-	-	SNP1/...SC01
PRTT..+...+...CO31 ..._.	SNP3/...CO41 ..._.	HR	SNP1/...SC41	HT	SNP1/...SC01
PRN..+...CO31 ..._.	SNP3/...CO41 ..._.	H	-	-	SNP2/...SC01
PRNT..+...+...CO31 ..._.	SNP3/...CO41 ..._.	H	SNP2/...SC31...3.	HN	SNP1/...SC1C ..._.
PRNN..+...+...CO31 ..._.	SNP3/...CO 41 ..._.	H	SNP2/...SC41	-	SNP2/...FR03
PRR..+...CO41 ..._.	SNP3/...CO41 ..._.	G	-	-	SNP3/...SC11
PRRT ..+...+...CO31 ..._.	SNP3/...CO41 ..._.	G	SNP3/...SC71 ...3.	HR	SNP1/...SC1E ..._.
PRRN..+...+...CO31 ..._.	SNP3/...CO41 ..._.	G	SNP3/...SC71	H	SNP2/...SC01
PRRR..+...+...CO41 ..._.	SNP3/...CO41 ..._.	G	SNP3/...SC71	G	SNP3/...SC11
PFN..+...CO31 ..._.	TAP 60-200...CO31 ..._.	S	-	-	SNP2/...SC01
PFNT..+...+...CO31 ..._.	TAP 60-200...CO31 ..._.	S	SNP2/...SC31...3.	HN	SNP1/...SC1C
PFNN..+...+...CO31 ..._.	TAP 60-200...CO31 ..._.	S	SNP2/...SC41	-	SNP2/...FR03
PFR..+...CO31 ..._.	TAP 60-200...CO31 ..._.	E	-	-	SNP3/...SC11
PFRN..+...+...CO31 ..._.	TAP 60-200...CO31 ..._.	E	SNP3/...SC71	H	SNP2/...SC01
PFF..+...CO41 ..._.	TAP 60-200...CO41 ..._.	F	-	-	TAP 60-200...SC11

To assembly tandem pumps consider first and rear stage; for triple pumps consider all stages; for multi-stage pumps consider first stage, middle stages and rear stage. Above table shows the CO31 ...\_ - CO41 ...\_ standard configuration only, corresponding to CO01 of single pump; for different configurations of shaft and front flange see the pages regarding single pumps.

Example:

**PRNN26 + 19 + 14 D SC37 ...\_G**

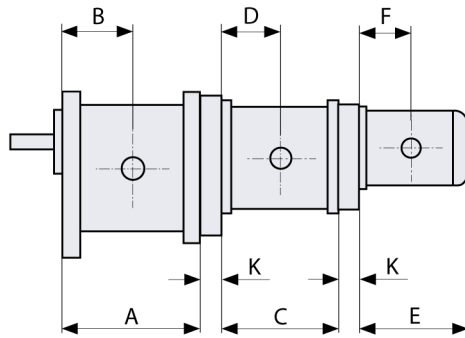
**P** means multistage pump, **R** means SNP3, **N** means SNP2, **26** means displacement 1<sup>st</sup> stage, **19** means displacement 2<sup>nd</sup> stage, **14** means displacement 3<sup>rd</sup> stage, **D** means rotation clockwise, **SC** means shaft spline, **37** means type of flange (if there is in assembled different group, otherwise becomes **47**) the same configuration 07 single pump, **G** means special port configuration offset from center of the body.

# General Gear Pumps and Motors

## Technical Information

### Multi-Stage Pumps

**MULTI-STAGE PUMPS  
WITH EUROPEAN  
STANDARD FRONT  
FLANGE (01)**



Coupling kit width – K		mm [in]
SNP1 + SNP1		0
SNP2 + SNP1		0
SNP2 + SNP2		0
SNP3 + SNP1		0
SNP3 + SNP2		25.0 [0.984]
SNP3 + SNP3		0
TAP60-200 + SNP1		23.5 0.925
TAP60-200 + SNP2		25.0 [0.984]
TAP60-200 + SNP3		0
TAP60-200 + TAP60-200		0

All groups – dimensions (mm [in])

Product type	A	B	C	D	E	F	
Group 1 SNP1 SKP1	1.2	75.75 [2.982]	37.75 [1.486]	76.00 [2.992]	38.00 [1.496]	79.75 [3.140]	38.00 [1.496]
	1.7	77.25 [3.041]	38.50 [1.515]	77.50 [3.051]	38.75 [1.525]	81.25 [3.199]	38.75 [1.525]
	2.2	79.25 [3.120]	39.50 [1.555]	79.50 [3.130]	39.75 [1.565]	83.25 [3.278]	39.75 [1.565]
	2.6	81.25 [3.199]	40.50 [1.594]	81.50 [3.208]	40.75 [1.604]	85.25 [3.356]	40.75 [1.604]
	3.2	83.25 [3.278]	41.50 [1.634]	83.50 [3.287]	41.75 [1.644]	87.25 [3.435]	41.75 [1.644]
	3.8	85.25 [3.356]	42.50 [1.673]	85.50 [3.366]	42.75 [1.683]	89.25 [3.514]	42.75 [1.683]
	4.3	87.25 [3.435]	43.50 [1.712]	87.50 [3.445]	43.75 [1.722]	91.25 [3.592]	43.75 [1.722]
	6	93.75 [3.691]	46.75 [1.840]	94.00 [3.701]	47.00 [1.850]	97.75 [3.848]	47.00 [1.850]
	7.8	100.25 [3.947]	50.0 [1.968]	100.5 [3.956]	50.25 [1.978]	104.25 [4.104]	50.25 [1.978]
	10	109.25 [4.301]	54.50 [2.145]	109.5 [4.311]	54.75 [2.155]	113.25 [4.458]	54.75 [2.155]
12	117.25 [4.616]	58.50 [2.303]	117.5 [4.626]	58.75 [2.313]	121.25 [4.773]	58.75 [2.313]	
Group 2 SNP2 SKP2	4	87.50 [3.445]	43.3 [1.705]	87.50 [3.445]	43.3 [1.705]	93.0 [3.661]	43.3 [1.705]
	6	91.0 [3.582]	45.0 [1.771]	91.00 [3.582]	45.0 [1.771]	96.5 [3.799]	45.0 [1.771]
	8	95.0 [3.740]	45.0 [1.771]	95.00 [3.740]	45.0 [1.771]	100.5 [3.956]	45.0 [1.771]
	11	99.0 [3.897]	49.0 [1.929]	99.00 [3.897]	49.0 [1.929]	104.5 [4.114]	49.0 [1.929]
	14	105.0 [4.134]	52.0 [2.047]	105.0 [4.134]	52.0 [2.047]	110.5 [4.350]	52.0 [2.047]
	17	109.0 [4.291]	52.0 [2.047]	109.0 [4.291]	52.0 [2.047]	114.5 [4.508]	52.0 [2.047]
	19	113.0 [4.449]	56.0 [2.205]	113.0 [4.449]	56.0 [2.205]	118.5 [4.665]	56.0 [2.205]
	22	119.0 [4.685]	59.0 [2.323]	119.0 [4.685]	59.0 [2.323]	124.5 [4.902]	59.0 [2.323]
	25	123.0 [4.843]	59.0 [2.323]	123.0 [4.843]	59.0 [2.323]	128.5 [5.059]	59.0 [2.323]
Group 3 SNP3	22	126.0 [4.960]	63.0 [2.480]	126.0 [4.960]	63.0 [2.480]	132.5 [5.216]	63.0 [2.480]
	26	129.0 [5.078]	64.5 [2.539]	129.0 [5.078]	64.5 [2.539]	135.5 [5.334]	64.5 [2.539]
	33	134.0 [5.275]	67.0 [2.637]	134.0 [5.275]	67.0 [2.637]	140.5 [5.531]	67.0 [2.637]
	38	137.5 [5.413]	68.8 [2.708]	137.5 [5.413]	68.8 [2.708]	144.0 [5.669]	68.8 [2.708]
	44	142.0 [5.590]	71.0 [2.795]	142.0 [5.590]	71.0 [2.795]	148.5 [5.846]	71.0 [2.795]
	48	145.0 [5.708]	72.5 [2.854]	145.0 [5.708]	72.5 [2.854]	151.5 [5.964]	72.5 [2.854]
	55	150.0 [5.905]	75.0 [2.952]	150.0 [5.905]	75.0 [2.952]	156.5 [6.161]	75.0 [2.952]
	63	156.0 [6.141]	78.0 [3.071]	156.0 [6.141]	78.0 [3.071]	162.5 [6.397]	78.0 [3.071]
	75	164.0 [6.456]	82.0 [3.228]	164.0 [6.456]	82.0 [3.228]	170.5 [6.712]	82.0 [3.228]
	90	174.0 [6.850]	87.0 [3.425]	174.0 [6.850]	87.0 [3.425]	180.5 [7.106]	87.0 [3.425]
Group 4 TAP60-200	60	176.0 [6.929]	88.0 [3.464]	176.0 [6.929]	88.0 [3.464]	174.5 [6.870]	88.0 [3.464]
	85	186.0 [7.323]	93.0 [3.661]	186.0 [7.323]	93.0 [3.661]	184.5 [7.264]	93.0 [3.661]
	106	194.0 [7.637]	97.0 [3.819]	194.0 [7.637]	97.0 [3.819]	192.5 [7.578]	97.0 [3.819]
	130	203.0 [7.992]	101.5 [3.996]	203.0 [7.992]	101.5 [3.996]	201.5 [7.933]	101.5 [3.996]
	148	210.0 [8.267]	105.0 [4.134]	210.0 [8.267]	105.0 [4.134]	208.5 [8.208]	105.0 [4.134]
	180	222.0 [8.740]	111.0 [4.370]	222.0 [8.740]	111.0 [4.370]	220.5 [8.681]	111.0 [4.370]
	200	230.0 [9.055]	115.0 [4.527]	230.0 [9.055]	115.0 [4.527]	228.5 [8.996]	115.0 [4.527]

# General Gear Pumps and Motors

## Technical Information

### Multi-Stage Pumps

#### **MULTI-STAGE PUMPS WITH EUROPEAN STANDARD FRONT FLANGE (01) (continued)**

*Examples of overall length calculation:*

**2-stage pump:** SNP3/44 + SNP1/3.2

$$A = 142.0 \text{ mm}$$

$$K = 0$$

$$E = 87.25 \text{ mm}$$

$$L_{\text{tot}} = 142 + 0 + 87.25 = 229.25 \text{ mm}$$

**4-stage pump:** SNP3/55 + SNP2/17 + SNP2/8 + SNP1/2.2

$$A = 150.0 \text{ mm}$$

$$K = 25.0 \text{ mm (1}^\circ \text{ kit - 1}^{\text{st}} \text{ kit)}$$

$$C = 109.0 \text{ mm (2}^{\text{nd}} \text{ stage)}$$

$$K = 0 \text{ mm (2}^\circ \text{ kit - 2}^{\text{nd}} \text{ kit)}$$

$$C = 95.0 \text{ mm (3}^{\text{rd}} \text{ stage)}$$

$$K = 0 \text{ mm (3}^\circ \text{ kit - 3}^{\text{rd}} \text{ kit)}$$

$$E = 83.25 \text{ mm (4}^{\text{th}} \text{ stage)}$$

$$L_{\text{tot}} = 150.0 + 25.0 + 109.0 + 0 + 95.0 + 0 + 83.25 = 413.25 \text{ mm}$$