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## CYLINDERS & WET KITS



# CYLINDERS & WET KITS

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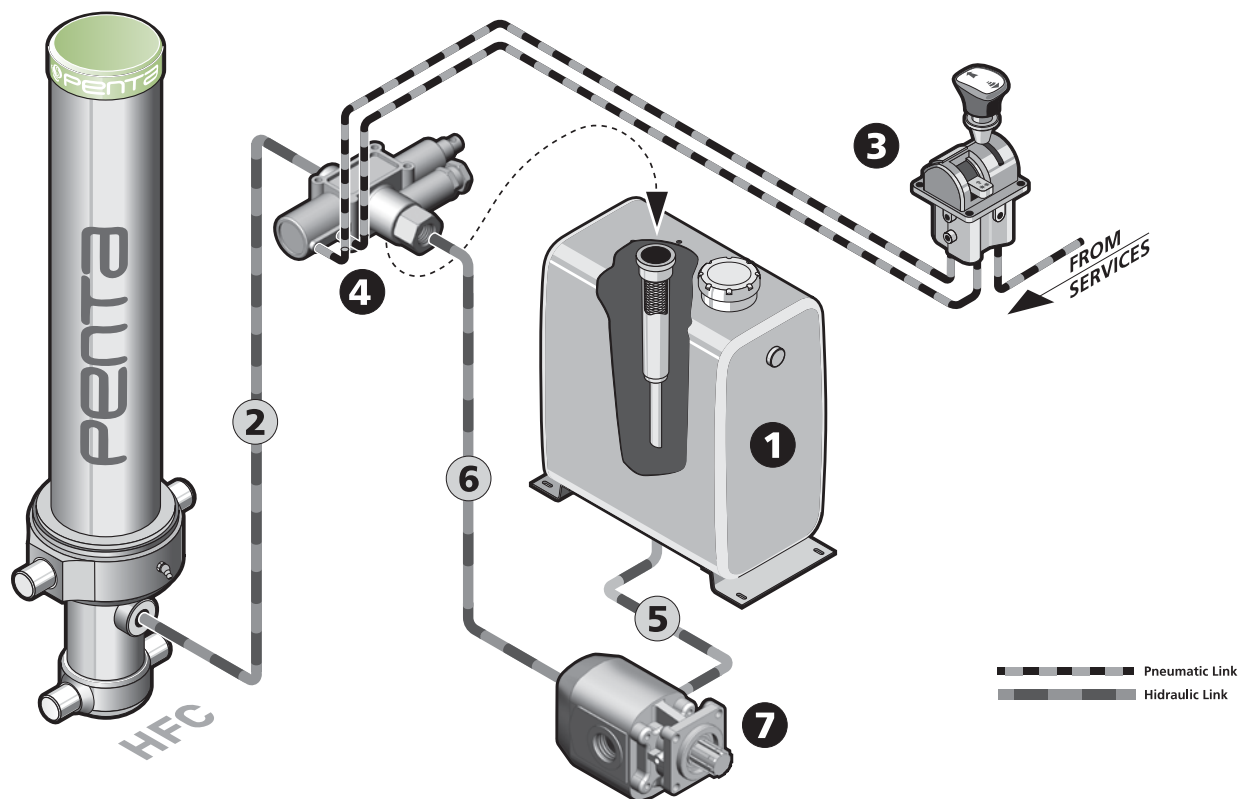
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# Truck ► HFC WET KIT MODULES

## EXAMPLE OF WET KIT HOOK-UP



### MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC00700010001	REAR MOUNTED OIL TANK, 70LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	"HOSE R2T G3/4" " F90-FD L=1500MM"	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034034	TIPPING VALVE KIT	1
	J60064001	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40045018	SUCTION KIT, Ø45MM	1
	D72000045F001	HOSE R4 Ø45 L=2000MM	1
6	J90019053	PRESSURE KIT, PUMP TO VALVE	1
	D72500019F001	"HOSE R2T G3/4" " FD-F90 L=2500MM"	1
7a	Y106512705501	GEAR PUMP, LH ROT., 65CC REAR OUTLET	1
7b	Y106522705501	GEAR PUMP, RH ROT., 65CC REAR OUTLET	1

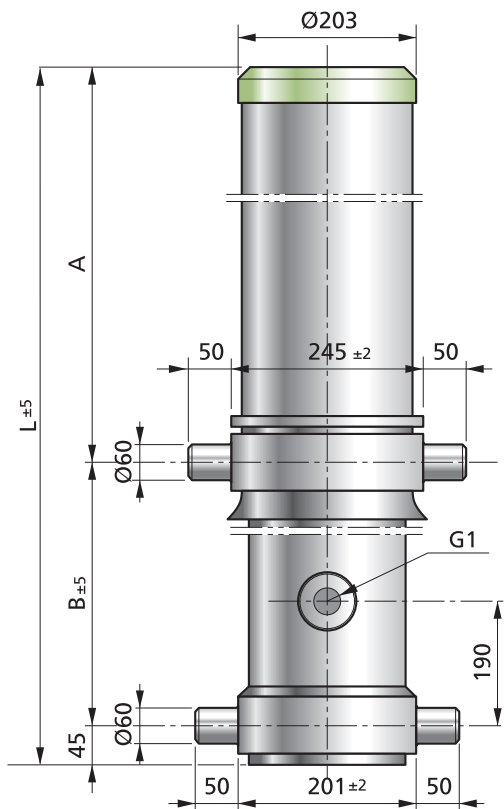
### OPTIONALS

● Penta Body Clamp  See page 32

● Truck-Trailer Kit  See page 32

● End of stroke device  See page 32

# Truck ► HFC 3840 129 3 FRONT MOUNT CYLINDER



SEAL KIT CODE

**K241001293001**

SLIDER KIT CODE

**K141001293001**L<sub>tot</sub> BODY LENGHT

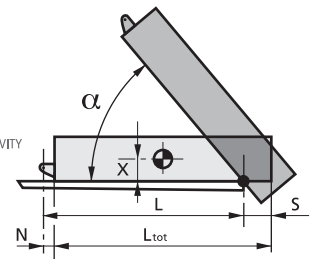
S REAR HOVERHANG

L PIVOT LENGHT

X VERT. POS. CENTRE OF GRAVITY

N BRACKET LENGHT

α BODY TILTING



## Tipping Weight [ton]

L <sub>tot</sub> [mm]	S [mm]	L [mm]	α [°]	X [mm]		
				400	700	1000
5100	200	5060	45	29	32	36
	400	4860	47	32	36	42
	600	4660	49	36	42	50
4950	200	4910	46	29	33	38
	400	4710	48	33	38	44
	600	4510	51	37	44	52
4800	200	4760	48	30	35	40
	400	4560	50	34	40	47
	600	4360	53	39	47	55

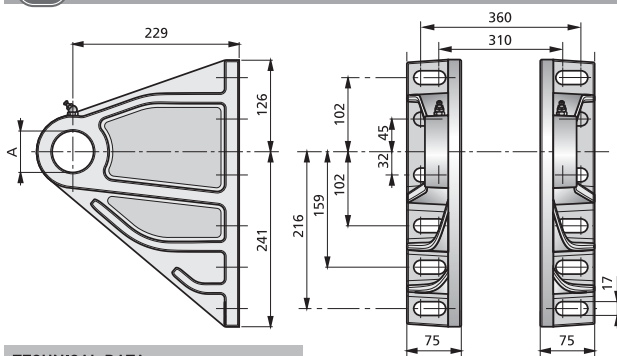
Measured @ maximum pressure of 200 bar and N = 160 mm  
Data ref. to cylinder 4214701293010

## TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm <sup>3</sup> ]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 3840 129 3	4214701293010	3	3840	178	38,1	200	29-55	1579	1214	320



### CYLINDER SUPPORT UPPER PAIR

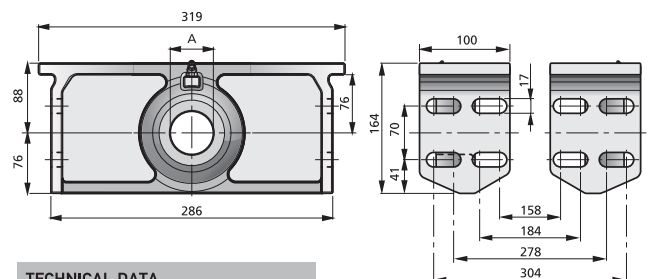


#### TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF60	A80060001	60	27



### CYLINDER SUPPORT LOWER PAIR

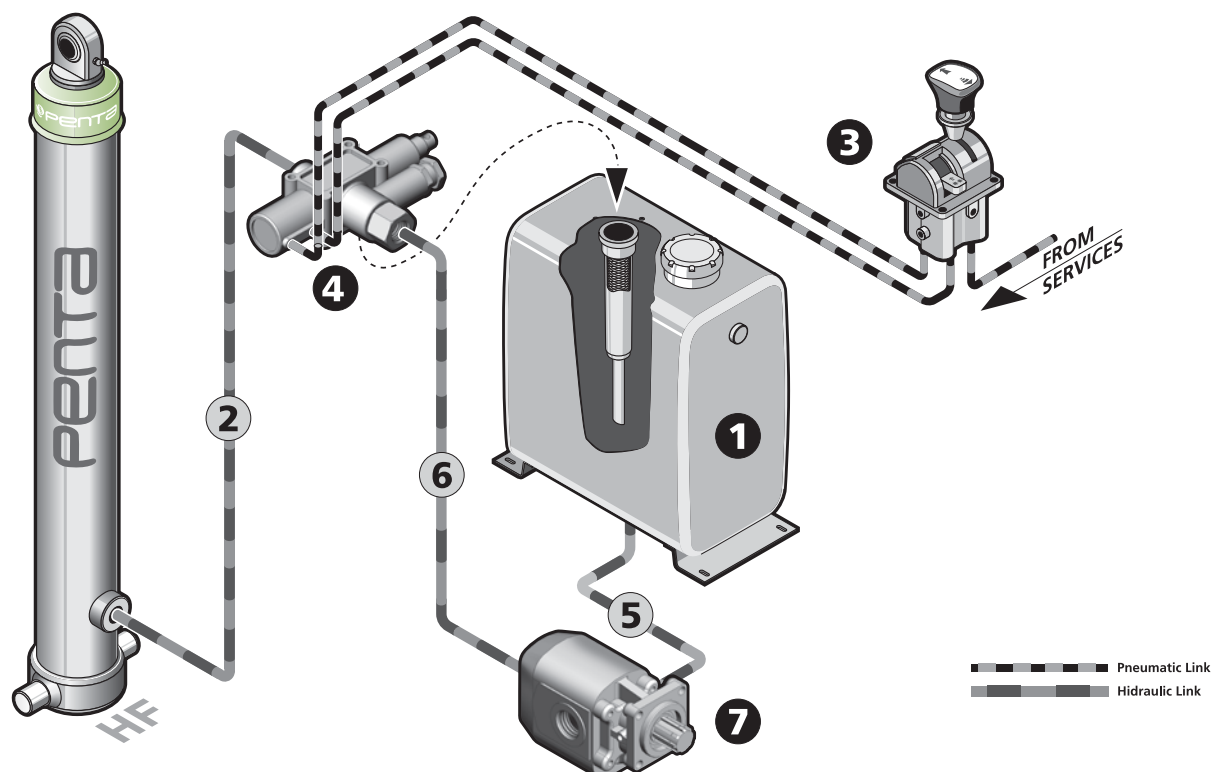


#### TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF 60	A90060002	60	22

# Truck ► HF WET KIT MODULES

## EXAMPLE OF WET KIT HOOK-UP



### MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC00700010001	REAR MOUNTED OIL TANK, 70LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	"HOSE R2T G3/4" " F90-FD L=1500MM"	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034034	TIPPING VALVE KIT	1
	J60064001	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40045018	SUCTION KIT, Ø45MM	1
	D72000045F001	HOSE R4 Ø45 L=2000MM	1
6	J90019053	PRESSURE KIT, PUMP TO VALVE	1
	D72500019F001	"HOSE R2T G3/4" " FD-F90 L=2500MM"	1
7a	Y106512705501	GEAR PUMP, LH ROT., 65CC REAR OUTLET	1
7b	Y106522705501	GEAR PUMP, RH ROT., 65CC REAR OUTLET	1

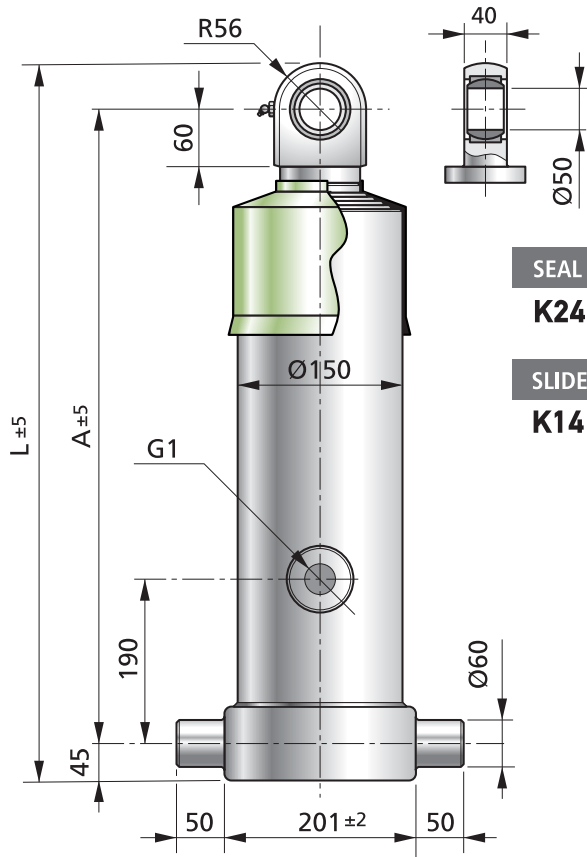
### OPTIONALS

● Penta Body Clamp  See page 32

● End of stroke device  See page 32

● Truck-Trailer Kit  See page 32

# Truck ► HF 3840 129 3 FRONT MOUNT CYLINDER



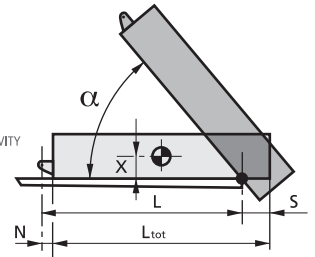
SEAL KIT CODE

**K241001293001**

SLIDER KIT CODE

**K141001293001**

$L_{tot}$  BODY LENGTH  
 $S$  REAR HOVERHANG  
 $L$  PIVOT LENGTH  
 $X$  VERT. POS. CENTRE OF GRAVITY  
 $N$  BRACKET LENGTH  
 $\alpha$  BODY TILTING



## Tipping Weight [ton]

$L_{tot}$ [mm]	$S$ [mm]	$L$ [mm]	$\alpha$ [°]	$X$ [mm]		
				400	700	1000
5100	200	5060	45	29	32	36
	400	4860	47	32	36	42
	600	4660	49	36	42	50
4950	200	4910	46	29	33	38
	400	4710	48	33	38	44
	600	4510	51	37	44	52
4800	200	4760	48	30	35	40
	400	4560	50	34	40	47
	600	4360	53	39	47	55

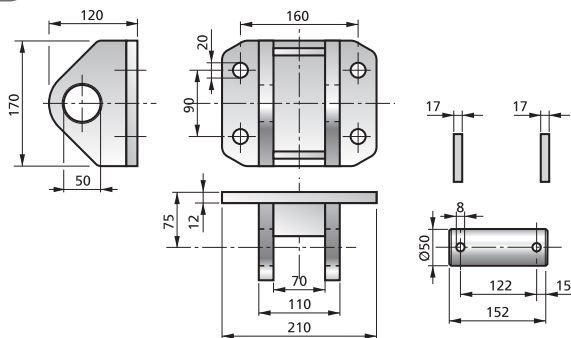
Measured @ maximum pressure of 200 bar and  $N = 160$  mm  
 Data ref. to cylinder 4114701293010

## TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]
HF 3840 129 3	4114701293010	3	3840	132	38,1	200	29-55	1683	1582



### CYLINDER SUPPORT UPPER

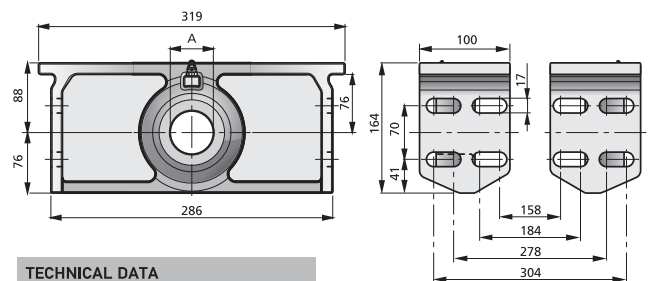


#### TECHNICAL DATA

MODEL	CODE	MASS [kg]
SUPP. HF60	A40050013	10



### CYLINDER SUPPORT LOWER PAIR

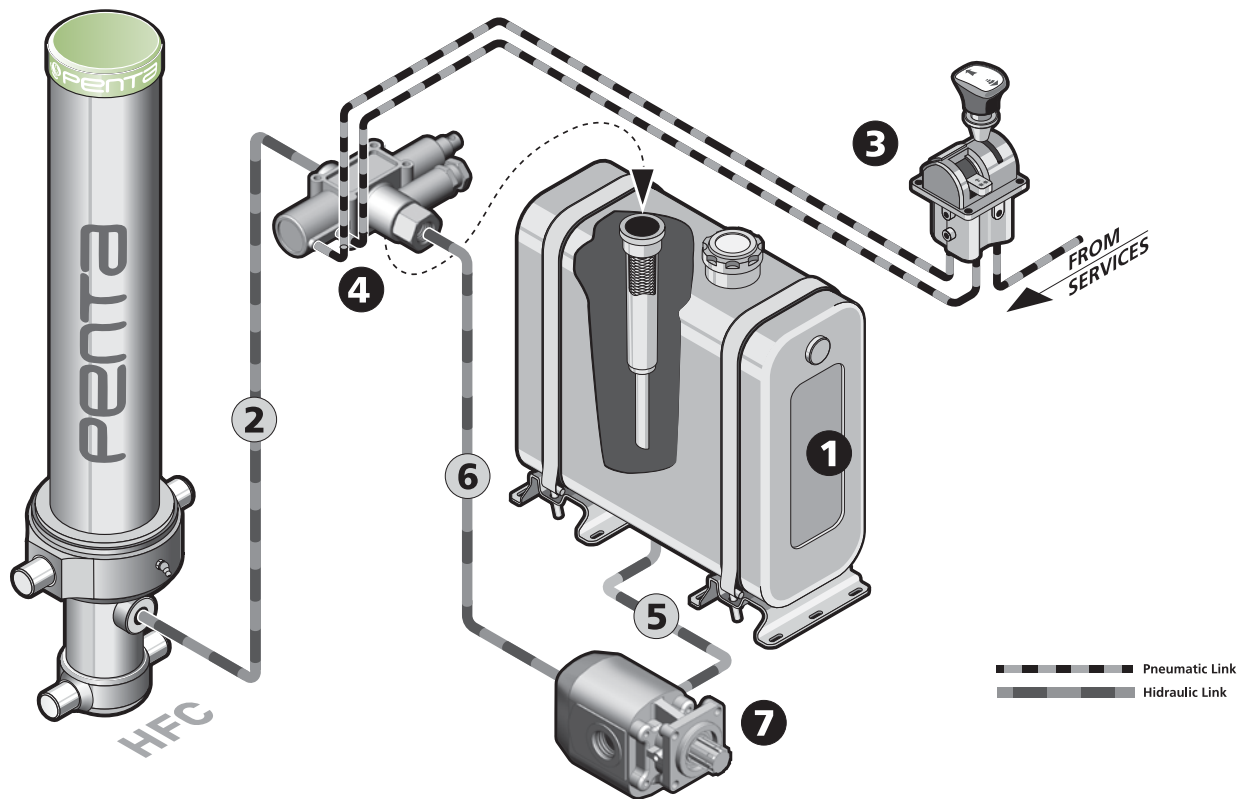


#### TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF 60	A90060002	60	22

# Truck ► HFC WET KIT MODULES

## EXAMPLE OF WET KIT HOOK-UP



### MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC01100010001	REAR MOUNTED OIL TANK, 110LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	"HOSE R2T G3/4" F90-FD L=1500MM"	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034034	TIPPING VALVE KIT	1
	J60064001	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40051019	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025039	PRESSURE KIT, PUMP TO VALVE	1
	D72500025F008	"HOSE R2T G1" FD 1"-F90 3/4" L=2500MM"	1
7a	Y108312704501	GEAR PUMP, LH ROT., 83CC REAR OUTLET	1
7b	Y108322704501	GEAR PUMP, RH ROT., 83CC REAR OUTLET	1

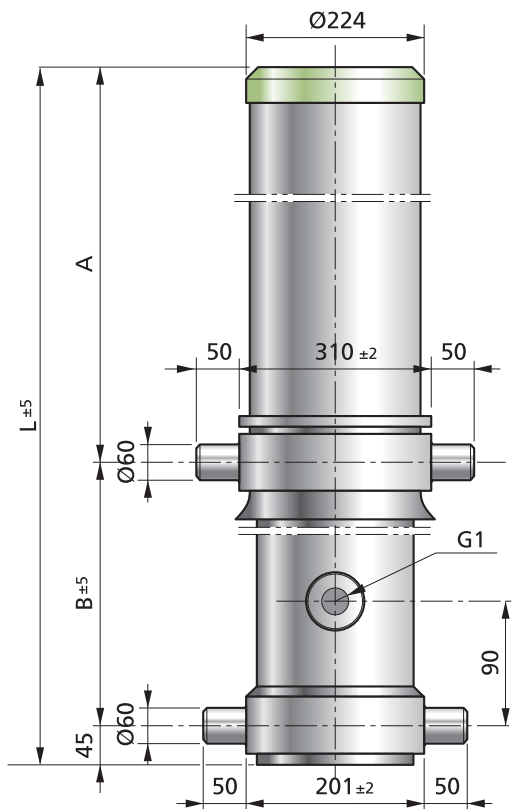
### OPTIONALS

● Penta Body Clamp  See page 32

● Truck-Trailer Kit  See page 32

● End of stroke device  See page 32

**Truck ► HFC 4940 149 4 FRONT MOUNT CYLINDER**

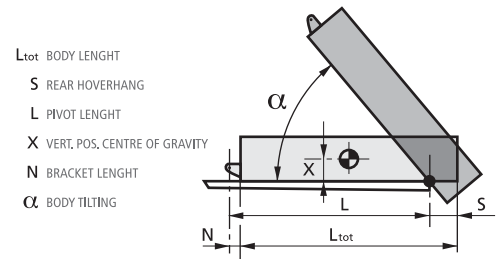


SEAL KIT CODE

**K241001494001**

SLIDER KIT CODE

**K141001494001**



### Tipping Weight [ton]

L <sub>tot</sub> [mm]	S [mm]	L [mm]	α [°]	X [mm]		
				400	700	1000
6100	200	6060	45	34	37	42
	500	5760	48	39	44	51
	800	5460	51	36	42	50
5950	200	5910	47	34	39	44
	500	5610	50	40	46	54
	800	5310	53	53	60	64
5800	200	5760	48	35	40	46
	500	5460	51	43	51	58
	800	5160	55	57	63	64

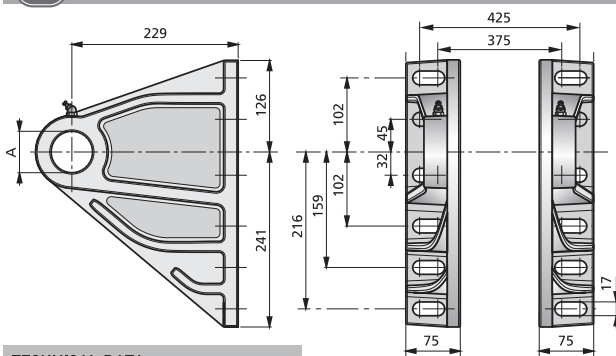
Measured @ maximum pressure of 200 bar and N = 160 mm  
Data ref. to cylinder 4214301493010

## TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 4950 149 4	4214301494010	4	4950	254	58,4	200	34-64	1547	1173	329



**CYLINDER SUPPORT UPPER PAIR**

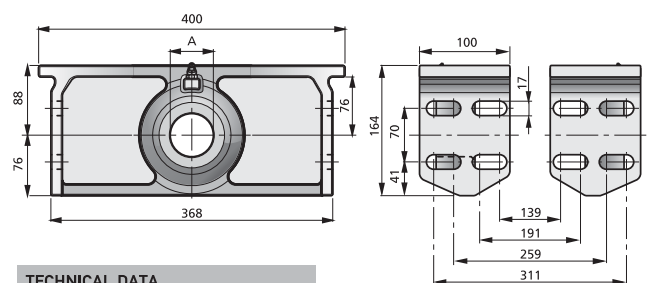


## TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF60	A80060001	60	27



**CYLINDER SUPPORT LOWER PAIR**



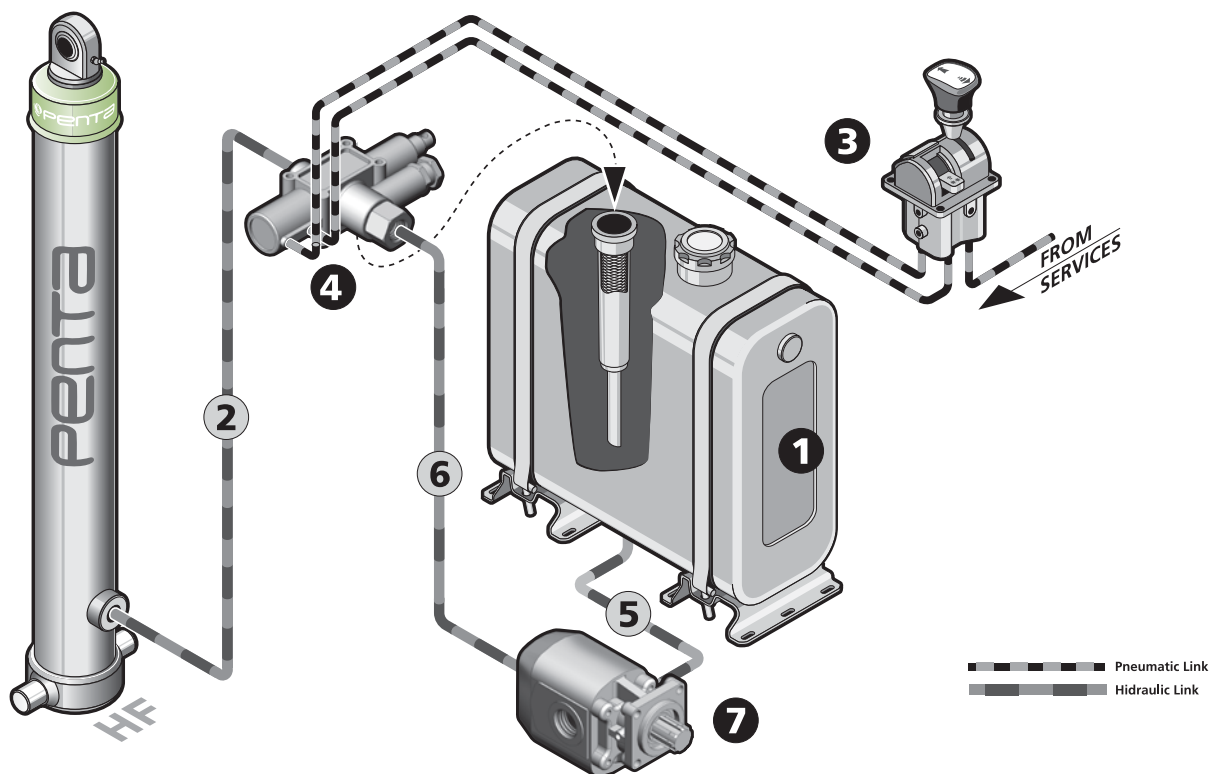
## TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF 60	A90060003	60	22



# Truck ► HF WET KIT MODULES

## EXAMPLE OF WET KIT HOOK-UP



### MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC01100010001	REAR MOUNTED OIL TANK, 110LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	"HOSE R2T G3/4" " F90-FD L=1500MM"	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034034	TIPPING VALVE KIT	1
	J60064001	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40051019	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025039	PRESSURE KIT, PUMP TO VALVE	1
	D72500025F008	"HOSE R2T G1" " FD 1" "-F90 3/4" " L=2500MM"	1
7a	Y108312704501	GEAR PUMP, LH ROT., 83CC REAR OUTLET	1
7b	Y108322704501	GEAR PUMP, RH ROT., 83CC REAR OUTLET	1

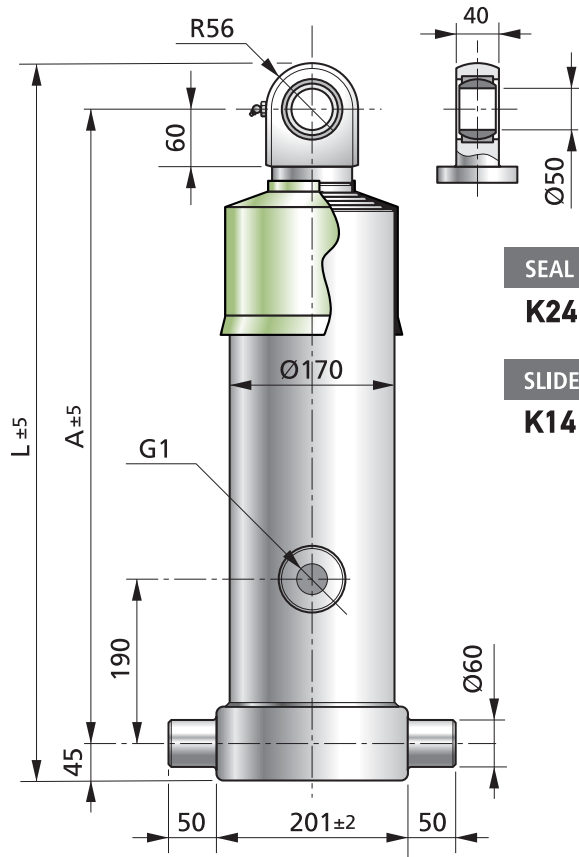
### OPTIONALS

● Penta Body Clamp  See page 32

● End of stroke device  See page 32

● Truck-Trailer Kit  See page 32

# Truck ► HF 4950 149 4 FRONT MOUNT CYLINDER



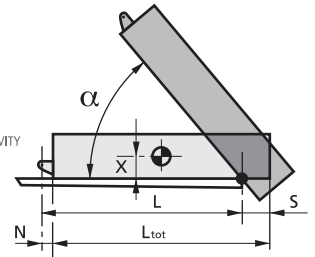
SEAL KIT CODE

**K241001494001**

SLIDER KIT CODE

**K141001494001**

$L_{tot}$  BODY LENGTH  
 $S$  REAR HOVERHANG  
 $L$  PIVOT LENGTH  
 $X$  VERT. POS. CENTRE OF GRAVITY  
 $N$  BRACKET LENGTH  
 $\alpha$  BODY TILTING



## Tipping Weight [ton]

$L_{tot}$ [mm]	$S$ [mm]	$L$ [mm]	$\alpha$ [°]	$X$ [mm]		
				400	700	1000
6100	200	6060	45	34	37	42
	500	5760	48	39	44	51
	800	5460	51	36	42	50
5950	200	5910	47	34	39	44
	500	5610	50	40	46	54
	800	5310	53	53	60	64
5800	200	5760	48	35	40	46
	500	5460	51	43	51	58
	800	5160	55	57	63	64

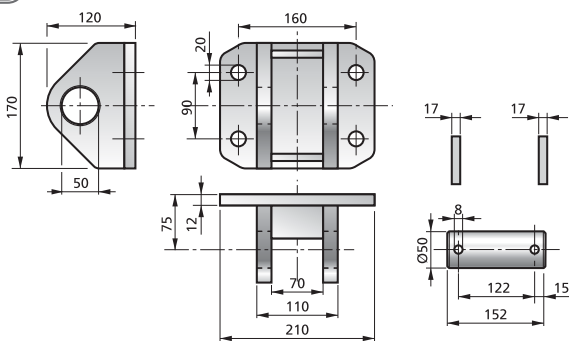
Measured @ maximum pressure of 200 bar and  $N = 160$  mm  
 Data ref. to cylinder 4113601494010

## TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm <sup>3</sup> ]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A
HF 4650 149 4	4113601494010	4	4650	164	54.8	200	34-64	1534	1433



### CYLINDER SUPPORT UPPER

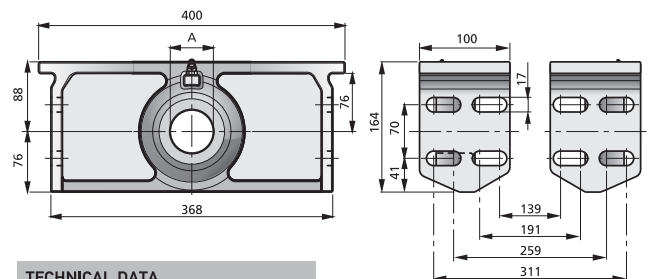


#### TECHNICAL DATA

MODEL	CODE	MASS [kg]
SUPP.HF60	A40050013	10



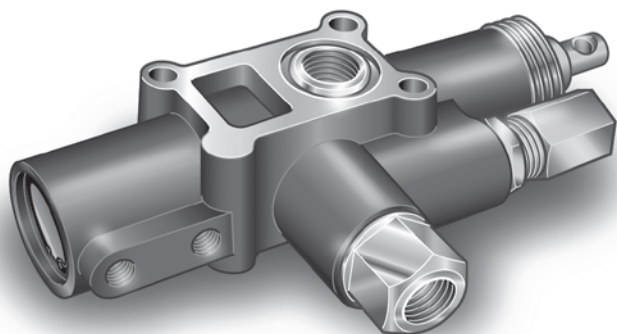
### CYLINDER SUPPORT LOWER PAIR



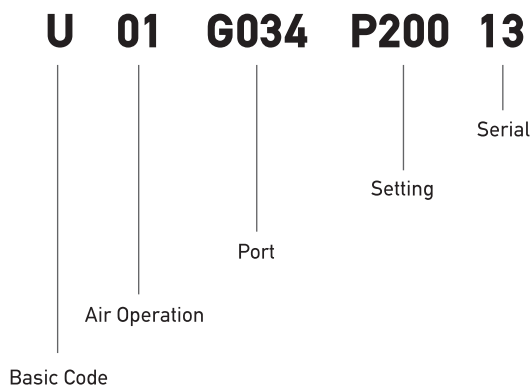
#### TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF 60	A90060003	60	22

# ► HT-VALVE DM130 TIPPING VALVE



## DECODING



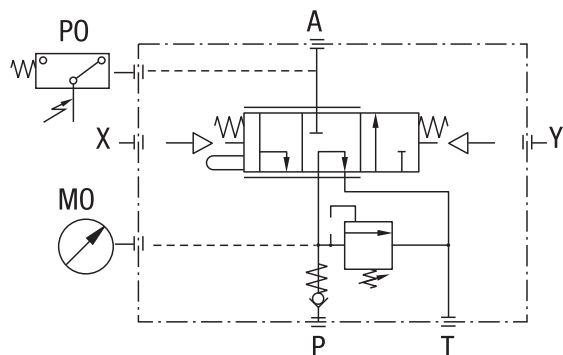
## TECHNICAL DATA

FLOW RATE	[lt/min]	130
MAX WORKING PRESSURE	[bar]	350
MAX PEAK PRESSURE (< 0.1s)	[bar]	500
T PORT MAX PRESSURE	[bar]	30
MINERAL OIL		ISO VG 46

FLUID TEMPERATURE	[°C (°F)]	-25 / +80
VISCOSITY RANGE	[cSt]	12 - 100
FILTERING ISO 4006 β <sub>x</sub> =75	[μm]	20-17 25
WEIGHT	[kg]	4.5
MAX PNEUMATIC WORKING PRESSURE	[bar]	12

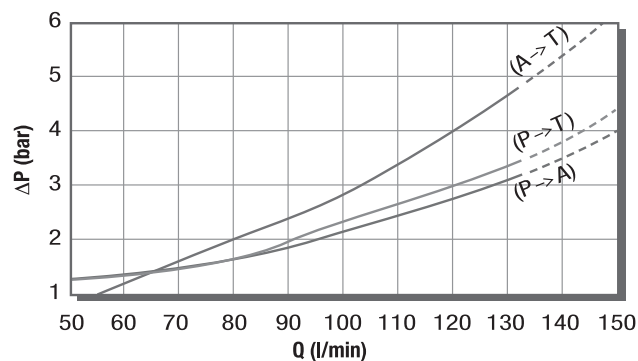
- Pneumatic or mechanical operated 130 l/min distributor, for tipping vehicles, with tractor only.
- It performs tipping, fast lowering and progressive lowering (by means of mechanical control cable TXZ or the progressive pneumatic control like CP/DP).
- The inlet check valve and the adjustable relief valve are built-in.  
The relief valve range is from 140-220 bar (std.=160 bar) or (upon request) from 220-350 bar (std.=250 bar).
- End-of-stroke rope or protection cup.
- Flange connection to tank or chassis is available.
- Upon request manometer or pressure switch gauge.

## FUNCTIONAL DIAGRAM

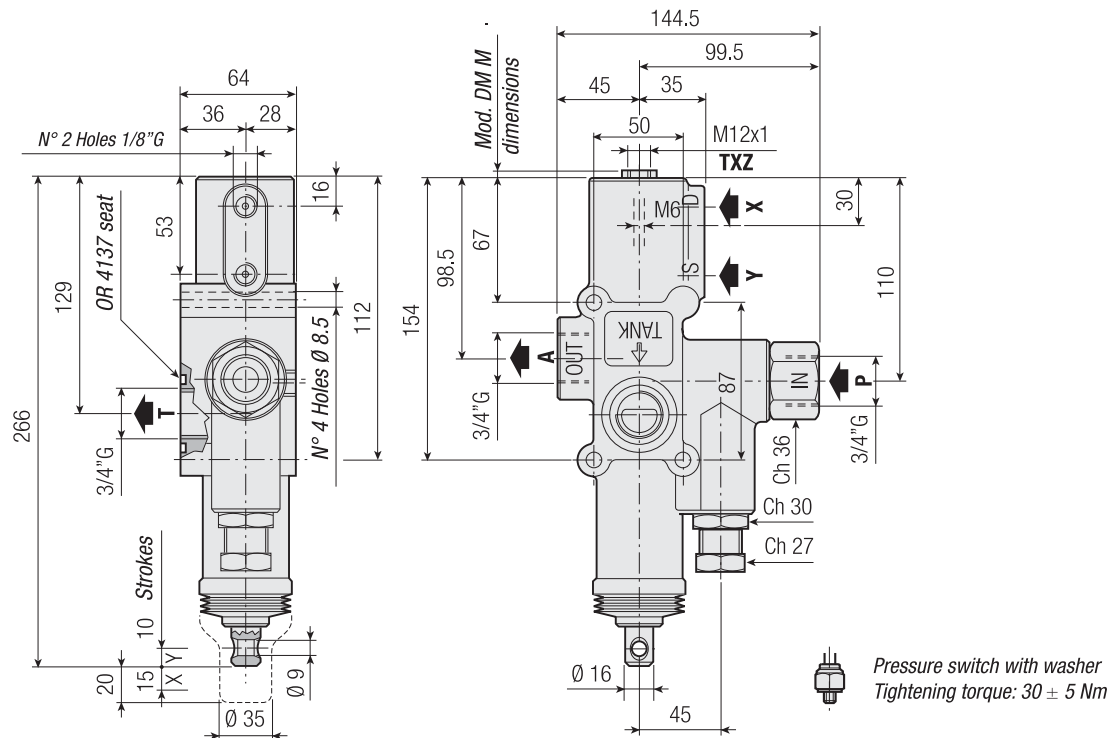


## PRESSURE DROP

- Refer to OIL TYPE  
ISO VG 46 A 50° (ν = 30 cst)

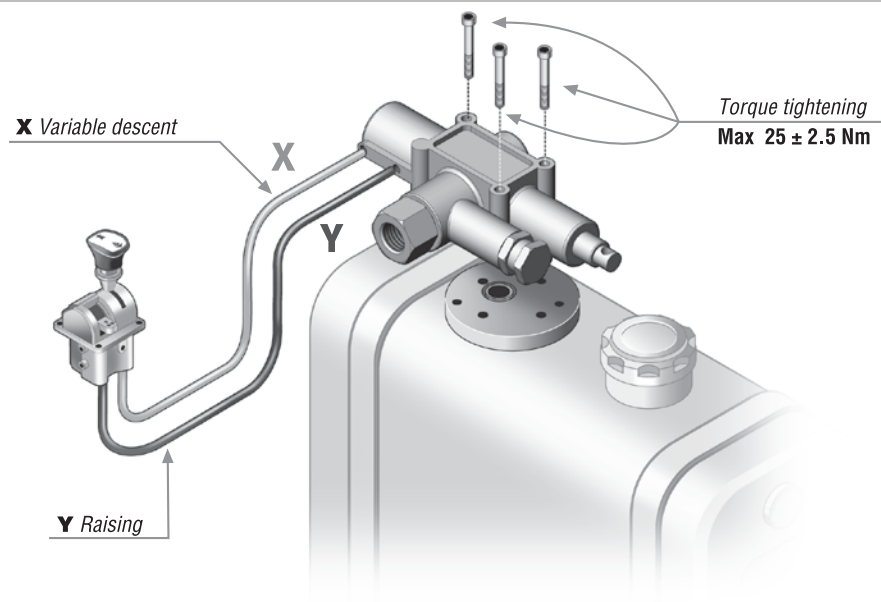


## Standard Version



DESCRIPTION	CODE
Pressure switch	DK0F09

## STUD KIT FOR TANK MOUNTING



DESCRIPTION	CODE
Complete valve Kit	J3G034034 (U01G034P20013 + J60064001)
Filter and plate fitting valve Kit	J60064001 (see pag. 13-15)

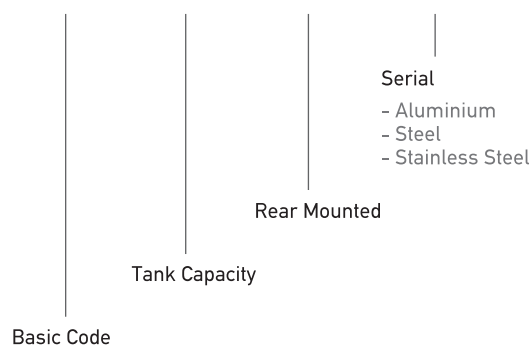
## ► DC2 OIL TANK



Rear mounted with provision for return filter

### DECODING

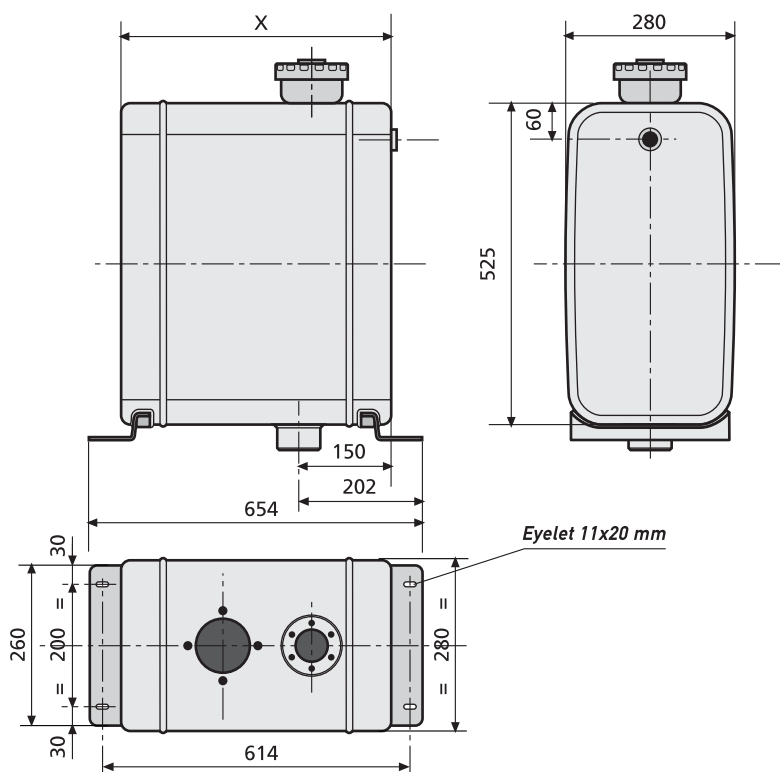
**DC 0070 001 0000**



### TECHNICAL DATA

CODE	MATERIAL	CAPACITY [lt]	X
DC00700010001	Acciaio - Steel	70	550
DC00700010002	Alluminio - Aluminium	70	550
DC00700010003	Acciaio Inox - Inox Steel	70	550

Metallic oil tank - standard colour: BLACK (other versions and accessories upon request)



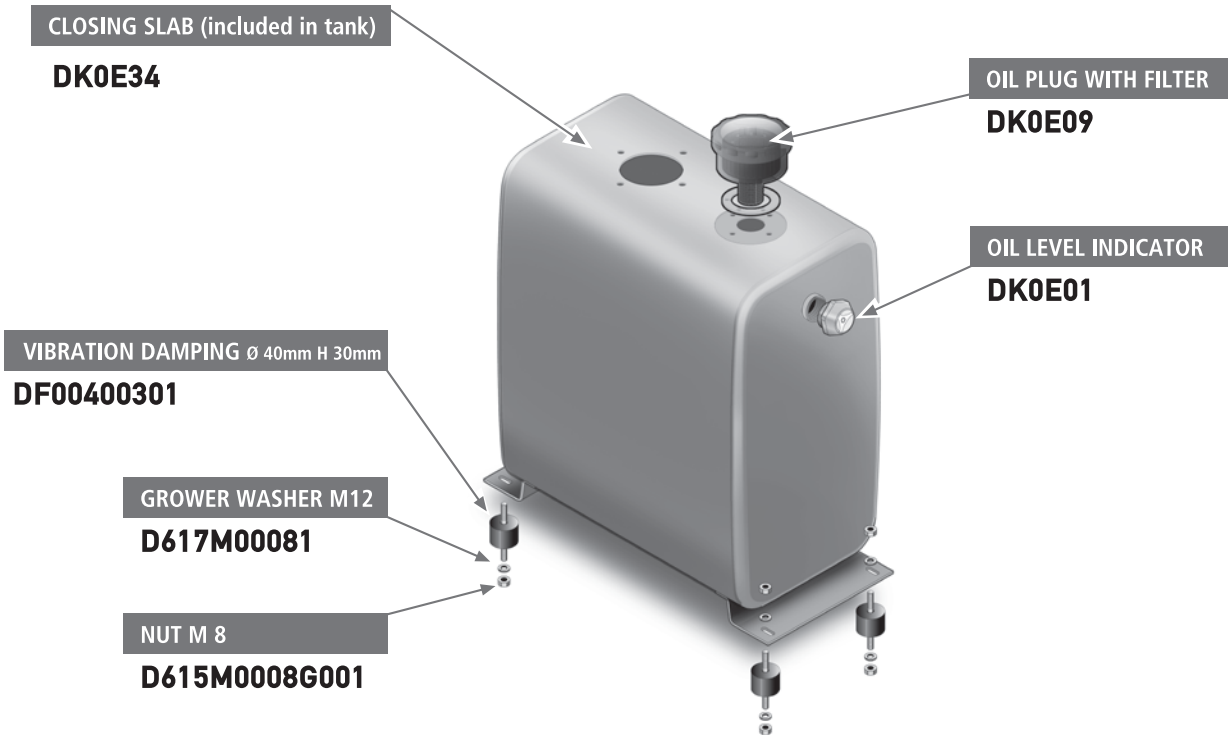
### NOTES

The tank will be supplied with ball valve 1"1/4 M/F conical with butterfly handle.  
The tank will be supplied without filter and plate for mounting valve (optional).

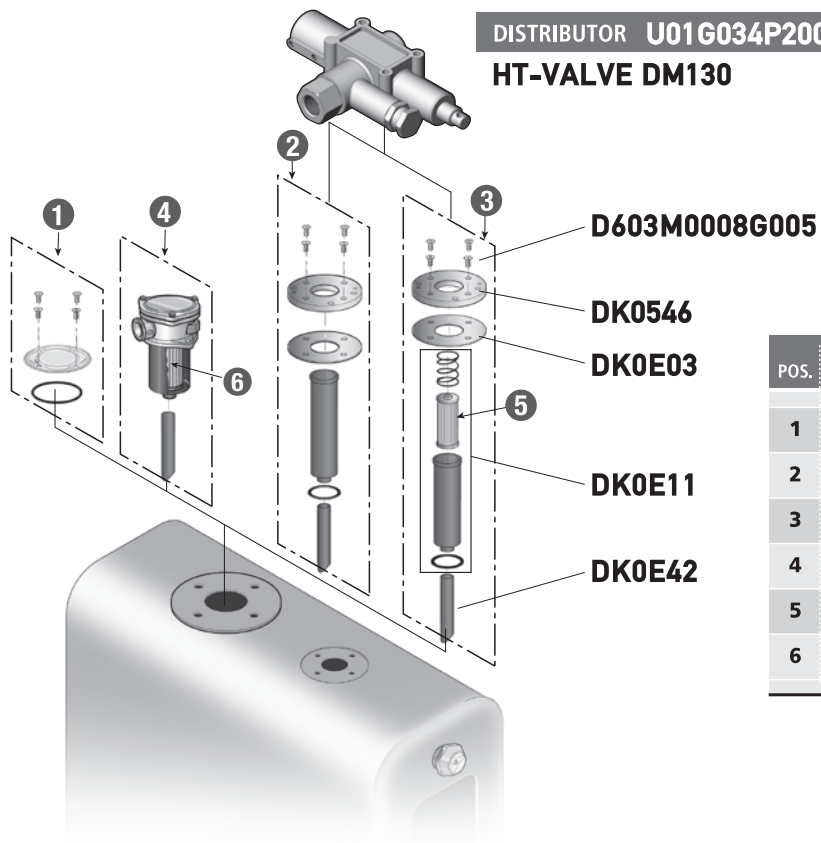
### BALL VALVE CODE

**D408G011140003**

## COMPONENTS (Included)



## POSSIBLE CONFIGURATIONS WITH HT-VALVE DM130



POS.	DESCRIPTION	TANK CAPACITY	CODE
1	Closing Plate (included in tank)		DK0E34
2	Distributor mounting plate	70 - 110	J60064002
3	Distributor mounting plate with filter	70 - 110	J60064001
4	Filter	70 - 110	DG00800702
5	Metallic cartridge 60 micron		DK0E30
6	Paper cartridge 25 micron		DK0E31

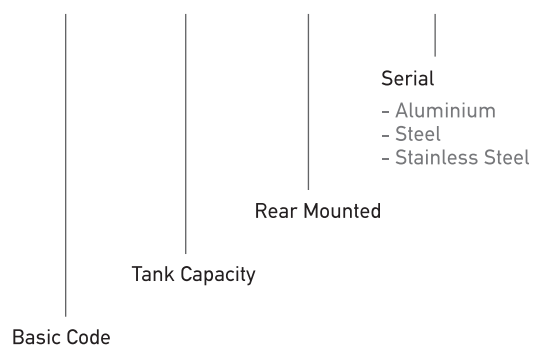
## ► DC5 OIL TANK



Rear mounted with provision for return filter

### DECODING

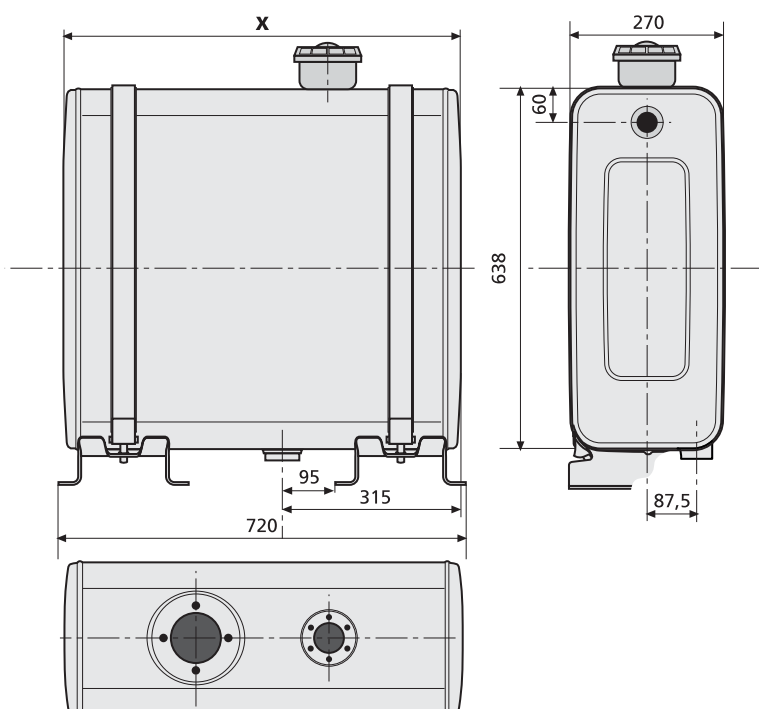
**DC 0110 001 0000**



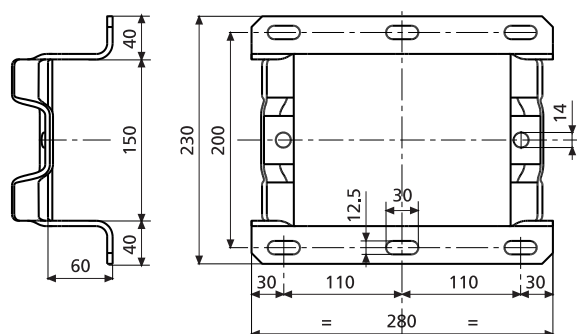
### TECHNICAL DATA

CODE	MATERIAL	CAPACITY [lt]	X
DC01100010001	Acciaio - Steel	110	700
DC01100010002	Alluminio - Aluminium	110	700
DC01100010003	Acciaio Inox - Inox Steel	110	700

Metallic oil tank - standard colour: BLACK (other versions and accessories upon request)



### SUPPORTS



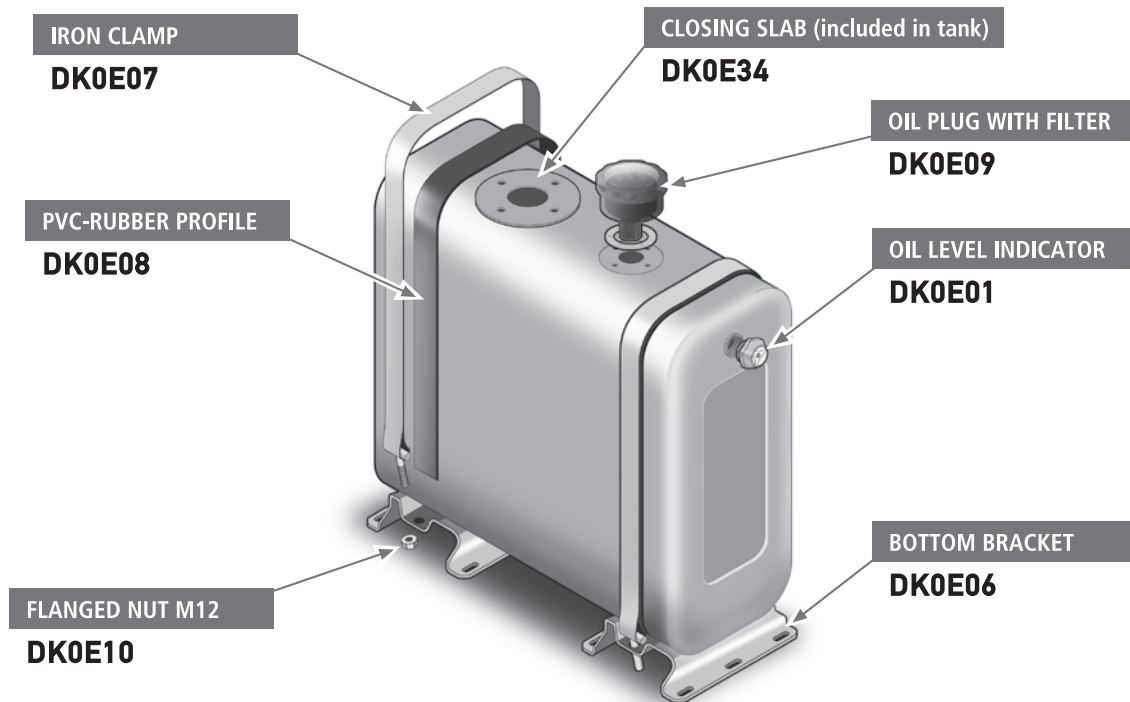
### NOTES

The tank will be supplied with ball valve 1"1/4 M/F conical with butterfly handle.  
The tank will be supplied without filter and plate for mounting valve (optional).

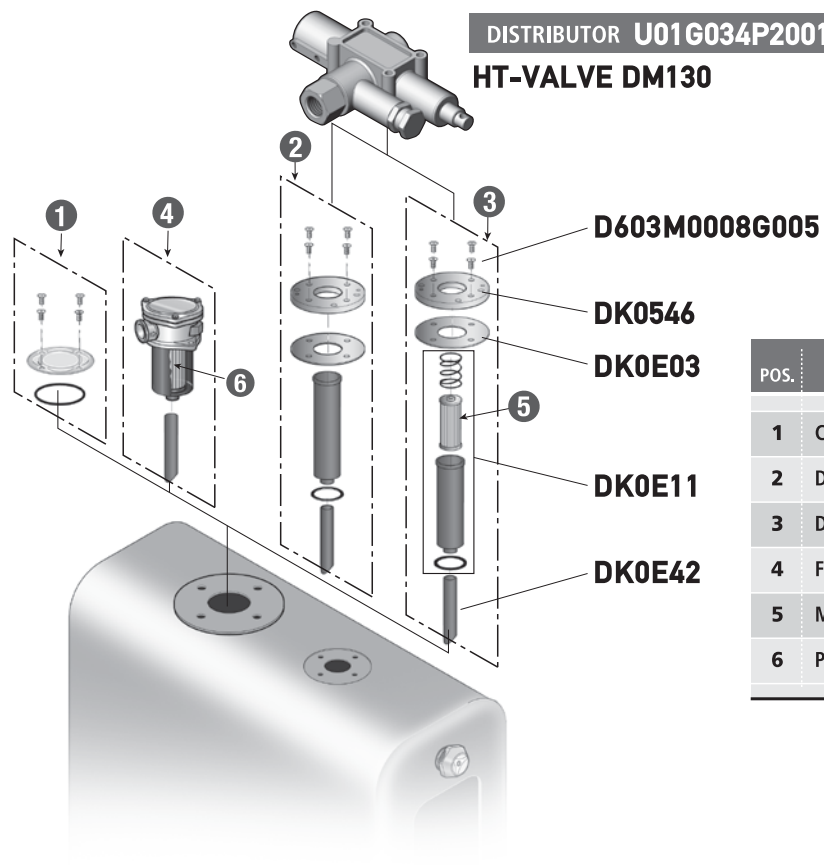
### BALL VALVE CODE

**D408G011140003**

## COMPONENTS (Included)



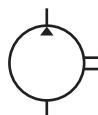
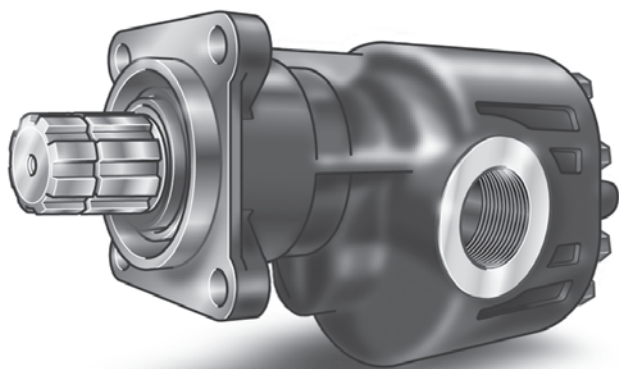
## POSSIBLE CONFIGURATIONS WITH HT-VALVE DM130



POS.	DESCRIPTION	TANK CAPACITY	CODE
1	Closing Plate (included in tank)		DK0E34
2	Distributor mounting plate	70 - 110	J60064002
3	Distributor mounting plate with filter	70 - 110	J60064001
4	Filter	70 - 110	DG00800702
5	Metallic cartridge 60 micron		DK0E30
6	Paper cartridge 25 micron		DK0E31



# HP-GEAR Y1-15 GEAR PUMP



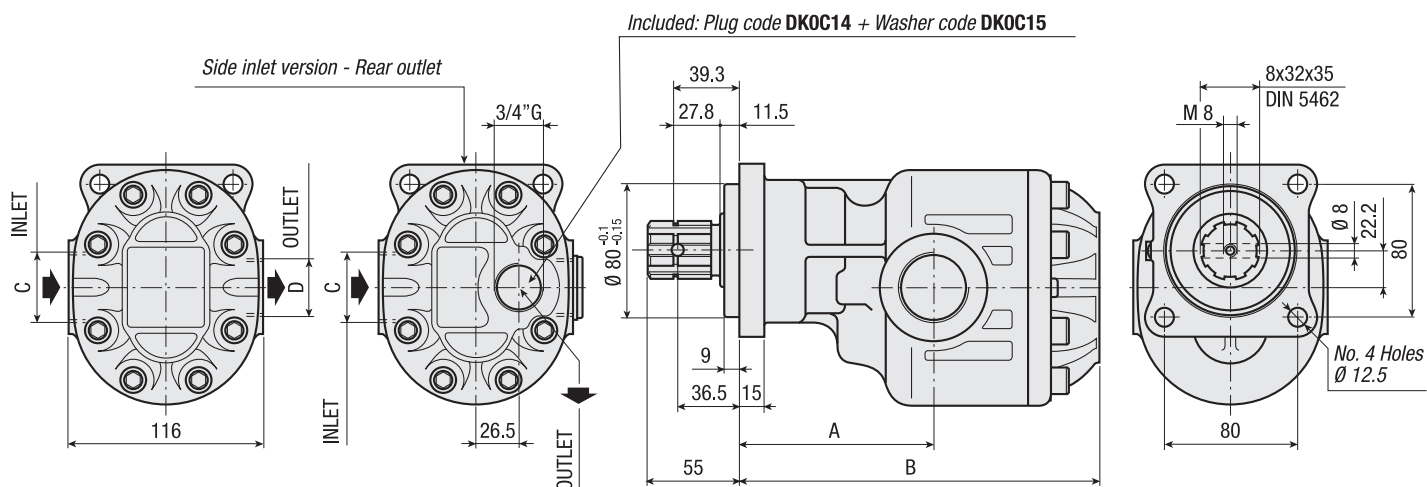
**DIN  
5462  
SE**

## DECODING

Y1	XXX	X	2	7	0	XX	00
Basic Code	Displacement	Rotation 1= Anticlockwise 2= Clockwise	Special Options Rear Outlet	Ports	Serial		

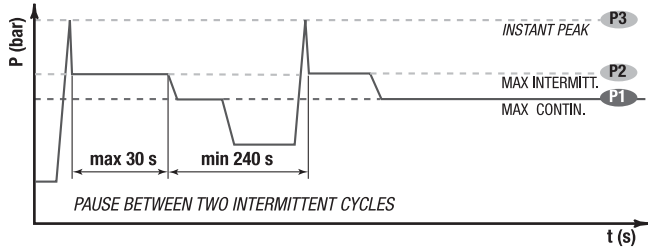
## TECHNICAL DATA

CODE	ROTATION	DISPLACEMENT [cm³/rev.]	A [mm]	B [mm]	C INLET	D OUTLET	WEIGHT [Kg]
Y106512705501	Anticlockwise	65	117	202	1" G	1" G	12.8
Y106522705501	Clockwise	65	117	202	1" G	1" G	12.8
Y108312704501	Anticlockwise	83	117	217	1" 1/4 G	1" G	14.1
Y108322704501	Clockwise	83	117	217	1" 1/4 G	1" G	14.1



## TECHNICAL DATA

### EXAMPLE OF WORKING CYCLES



INLET PRESSURE	[bar]	0.7÷1.5
OPERATING VISCOSITY RANGE	[cSt]	12÷100
MAX PEAK PRESSURE (< 0.1s)	[°C (t)]	-10° ÷ +80°

WORKING PRESSURE	CONTAMINATION		$\beta_x = 75$
	NAS 1638		
$\leq 200$ bar	12	21-18	40 $\mu\text{m}$
$\geq 200$ bar	11	20-17	25 $\mu\text{m}$

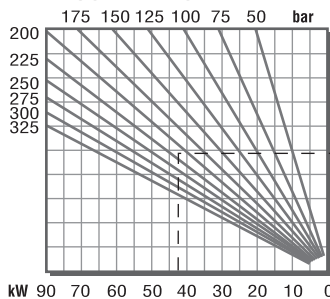
◀ RECOMMENDED FILTERING (return or outlet)

			Y106512705501 Anticlockwise	Y106522705501 Clockwise	Y108312704501 Anticlockwise	Y108322704501 Clockwise
DISPLACEMENT	Vg	[lt/min]	65	65	83	83
MAX CONTINUOUS OPERATING PRESSURE	P1	[bar]	240	240	220	220
MAX INTERMITT. OPERATING PRESSURE (max 30 s)	P2	[bar]	265	265	240	240
MAX PEAK PRESSURE (< 0.1s)	P3	[bar]	330	330	300	300
MAX INTERMITTENT SPEED ( $P \leq 20$ bar)	n3	[r.p.m]	3000	3000	3000	3000
MAX CONTINUOUS SPEED ( $\leq P1$ )	n1	[r.p.m]	2500	2500	2500	2500
MIN INTERMITTENT SPEED ( $\leq P2 \times 0.5$ ) (max 30 s)	n4	[r.p.m]	400	400	400	400

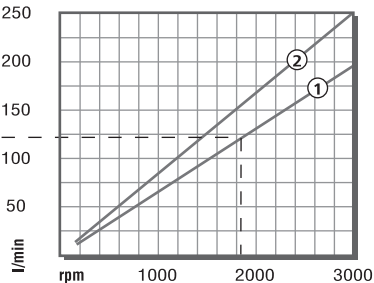
## DIAGRAMS

Specifications Refer to OIL TYPE ISO VG 46 A 50° ( $\nu = 30$  cst)

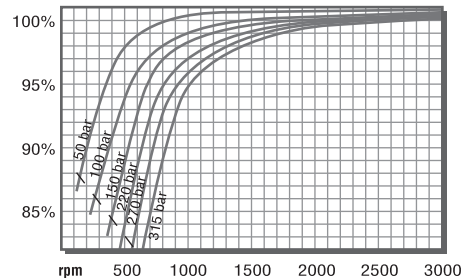
### ABSORBED POWER



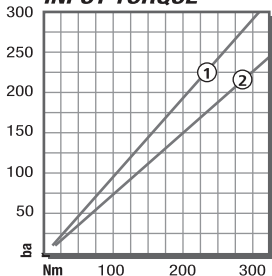
### CAPACITY



### VOLUMETRIC EFFICIENCY



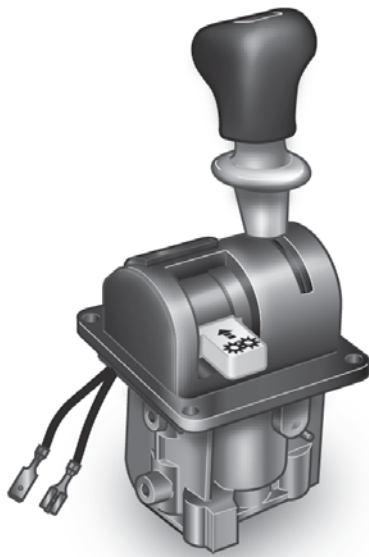
### INPUT TORQUE



① COD. Y106512705501 - Y106522705501

② COD. Y108312704501 - Y108322704501

# HC-PNEUMATIC D9-6 PNEUMATIC CONTROL



## Three Sections

### DECODING

**D902 G018 3 03**

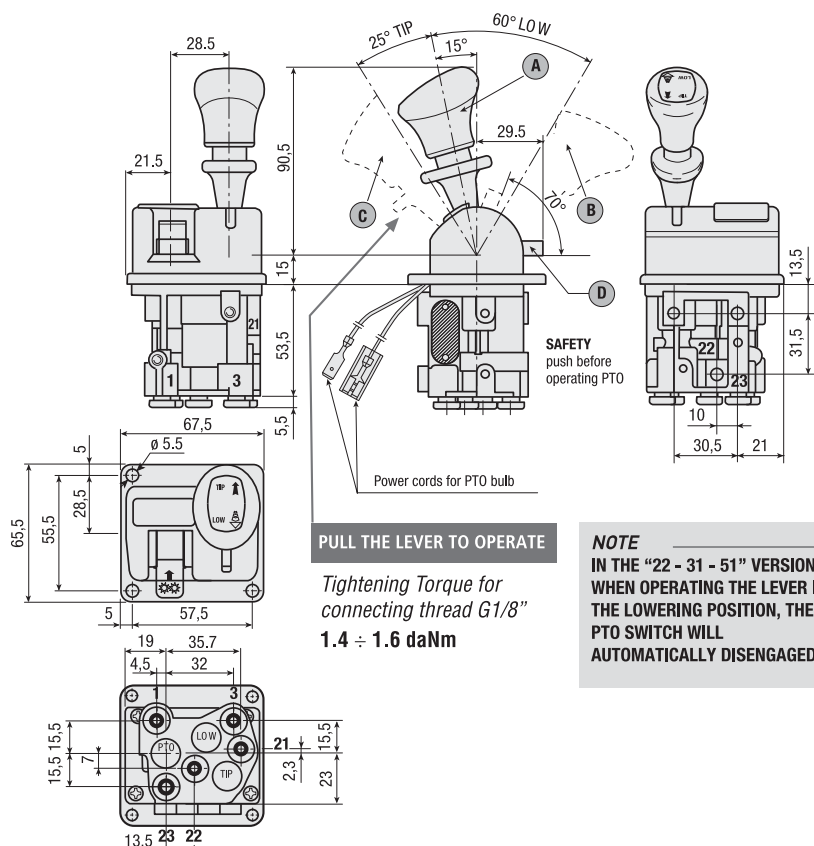
Basic Code | Ports | Sections Number | Serial

### D902G018303 SPECIFICATIONS

- Pneumatic distributor with proportional lowering control and automatic PTO disengagement.
- Tristable lever (three stable positions: rest, low, tip). With automatic PTO disengagement when body is lowering.

### TECHNICAL DATA

WORKING MEDIUM	Air	OPERATIVE TEMPERATURE	[°C]	-40°C / +80°C
MAX WORKING PRESSURE	[bar]	12	NOMINAL DIAMETER	[mm]
OPERATING VOLTAGE	[V DC]	24	CONTACTS	Normally Open



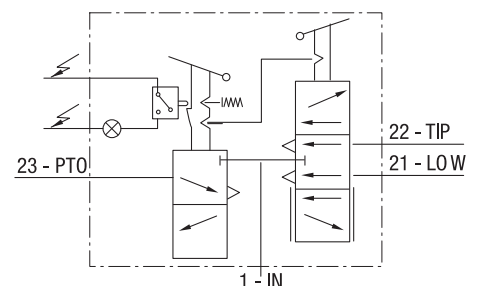
**NOTE**  
IN THE "22 - 31 - 51" VERSIONS  
WHEN OPERATING THE LEVER IN  
THE LOWERING POSITION, THE  
PTO SWITCH WILL  
AUTOMATICALLY DISENGAGED.

### LEVER POSITION

- A** Rest position (with lock)
- B** Operation PORT 21
- C** Operation PORT 22
- D** Operation PORT 23 (with stop)

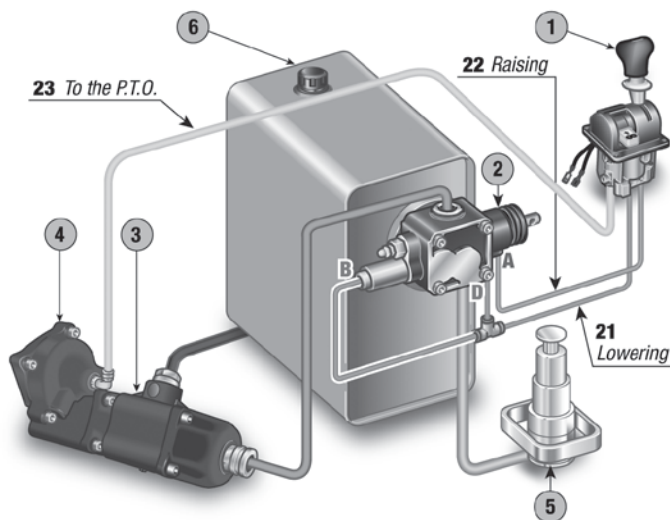
### AIR PORTS

- 1** Compressed air supply (**IN**) G 1/8"
- 21** Control lowering (**LOW**) G 1/8"
- 22** Control tipping (**TIP**) G 1/8"
- 23** Power take off engagement (**PTO**) G 1/8"
- 3** Free exhaust (**EX**) M5



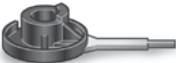


### EXAMPLE OF HOOK-UP

- 1 PNEUMATIC CONTROL  
2 DISTRIBUTOR  
3 PUMP
- 4 POWER TAKE OFF  
5 CYLINDER  
6 OIL TANK

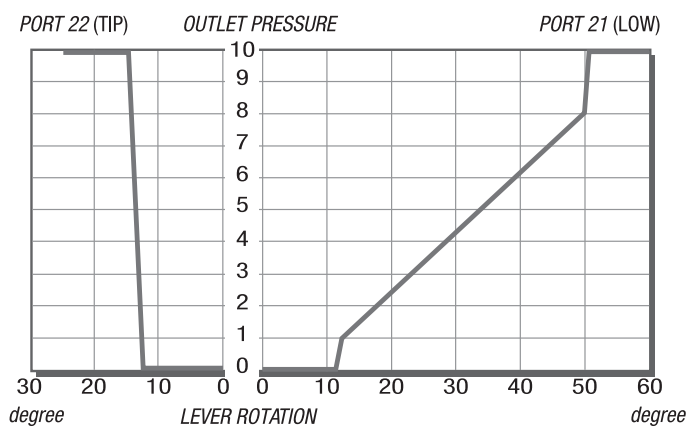


### NM3 SPARE PARTS KIT

CODE	DESCRIPTION	
DK0B15	PTO lever Kit with disengagement	
DK0B17	Lever Kit NM	
DK0B14	Lever with cam	

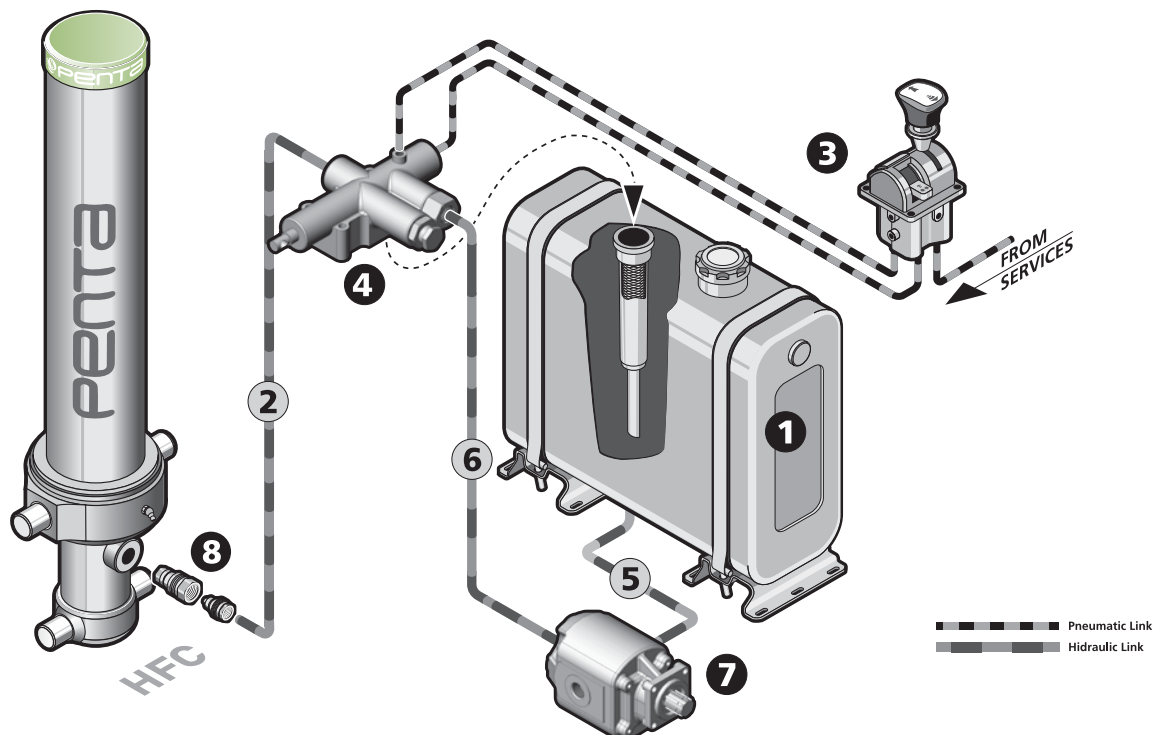
### DIAGRAM

DIAGRAM REFERRED TO SUPPLY PRESSURE = 10 bar



# Trailer ► HFC WET KIT MODULES

## EXAMPLE OF WET KIT HOOK-UP



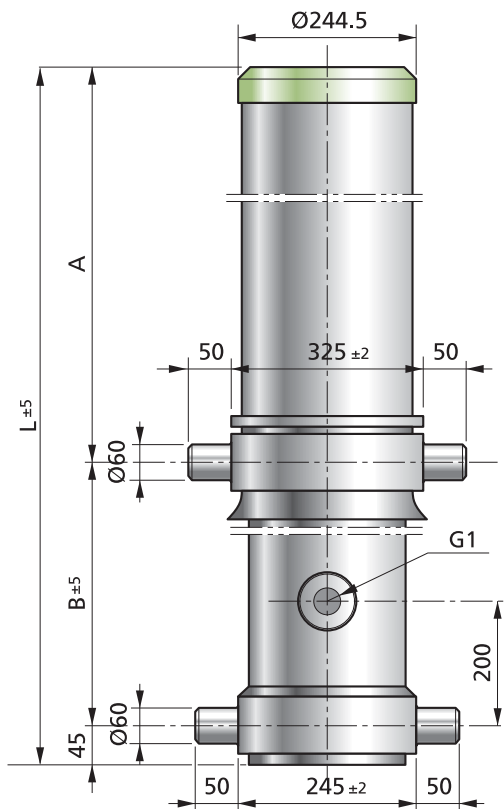
### MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC01600010001	REAR MOUNTED OIL TANK, 160LT OIL VOLUME	1
2	JA0025055	PRESSURE KIT, VALVE TO CYLINDER	1
	D74000025F003	"HOSE R2T G1" " FD-FD L=4000MM"	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G100036	TIPPING VALVE KIT	1
	DK0545	FILTER AND PLATE FITTING VALVE KIT	1
	U04G100P20001	DISTRIBUTORE IDRAULICO DM 160 TVM200	1
5	J40051016	SUCTION KIT, Ø51MM	1
	D72000051F003	HOSE R4 Ø51 L=2000MM	1
6	J90025040	PRESSURE KIT, PUMP TO VALVE	1
	D72000025F003	"HOSE R2T G1" " FD-F90 L=2500MM"	1
7a	Y109032404401	GEAR PUMP, 90CC BI-ROTATIONAL, 4 HOLES	1
7b	Y110032404401	GEAR PUMP, 100CC BI-ROTATIONAL, 4 HOLES	1
7c	Y111032404401	GEAR PUMP, 110CC BI-ROTATIONAL, 4 HOLES	1
7d	Y112032404401	GEAR PUMP, 120CC BI-ROTATIONAL, 4 HOLES	1
8	J8G100001	QUICK RELEASE COUPLINGS KIT	1
	D401G01000001	"THREADED TYPE G1" " FEMALE"	1
	D401G01000002	"THREADED TYPE G1" " MALE"	1

### OPTIONALS

● Penta Body Clamp  See page 32

## Trailer ► HFC 169 5 FRONT MOUNT CYLINDER

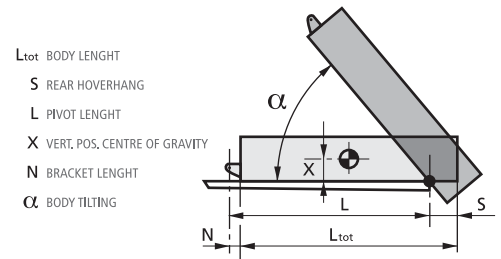


SEAL KIT CODE

**K241001695001**

SLIDER KIT CODE

**K141001695001**



### Tipping Weight [ton]

L <sub>tot</sub> [mm]	S [mm]	L [mm]	α [°]	X [mm]		
				400	700	1000
8200	200	8160	45	39	42	45
	500	7860	47	46	50	54
	800	7560	49	56	61	65
7850	200	7810	47	45	48	52
	500	7510	49	55	64	68
	800	7210	51	59	64	68
7500	200	7460	49	52	55	59
	500	7160	52	56	60	65
	800	6860	54	62	67	73

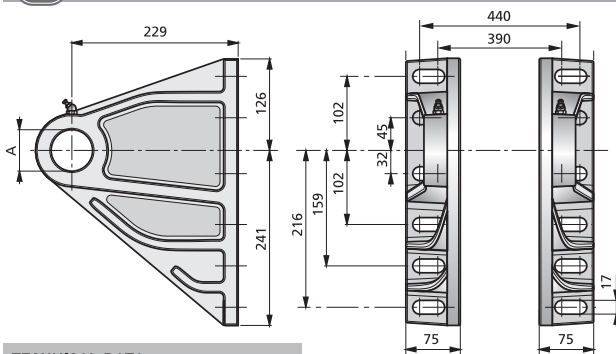
Measured @ maximum pressure of 200 bar and N = 160 mm  
Data ref. to cylinder 4212801695010

## TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 5420 169 5	4212801695010	5	5420	294	75.4	200	39-73	1412	1034	333
HFC 5800 169 5	4213601695010	5	5800	308	80.6	200	39-73	1492	1104	343
HFC 6170 169 5	4214301695010	5	6170	320	85.8	200	39-73	1562	1188	329
HFC 7120 169 5	4216801695010	5	7120	340	99.1	200	39-73	1812	1438	329
HFC 8070 169 5	4218801695010	5	8070	398	112.3	200	39-73	2002	1619	338



**CYLINDER SUPPORT UPPER PAIR**

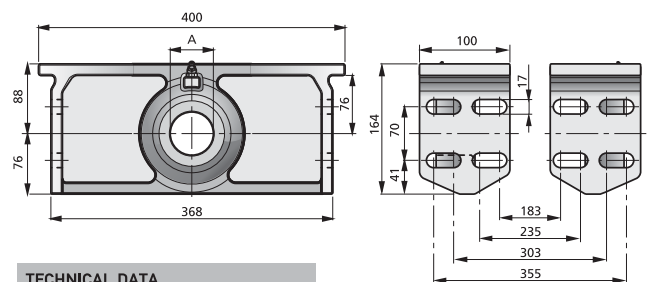


## TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF60	A80060001	60	27



## CYLINDER SUPPORT LOWER PAIR

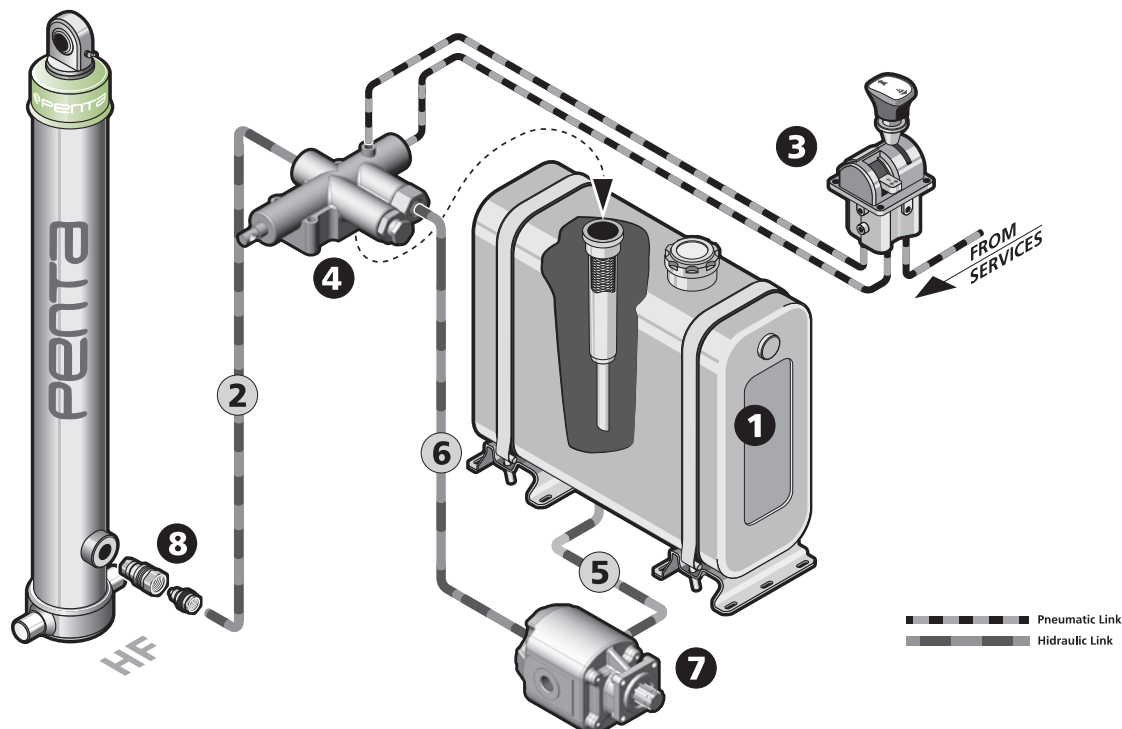


## TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF 60	A90060003	60	22

# Trailer ▶ HF WET KIT MODULES

## EXAMPLE OF WET KIT HOOK-UP



### MAIN COMPONENTS LIST

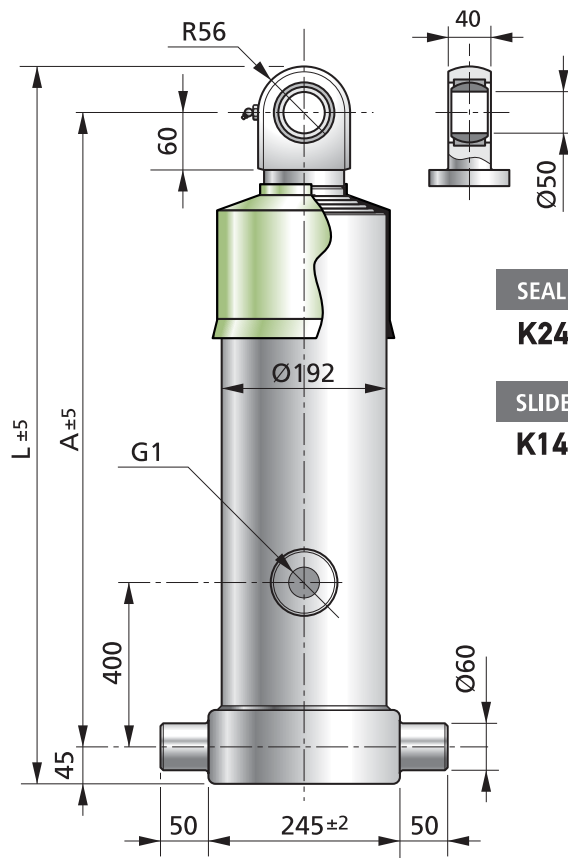
POS.	CODE	DESCRIPTION	QTY
1	DC01600010001	REAR MOUNTED OIL TANK, 160LT OIL VOLUME	1
2	JA0025055	PRESSURE KIT, VALVE TO CYLINDER	1
	D74000025F003	"HOSE R2T G1" " FD-FD L=4000MM"	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G100036	TIPPING VALVE KIT	1
	DK0545	FILTER AND PLATE FITTING VALVE KIT	1
	U04G100P20001	DISTRIBUTORE IDRAULICO DM 160 TVM200	1
5	J40051016	SUCTION KIT, Ø51MM	1
	D72000051F003	HOSE R4 Ø51 L=2000MM	1
6	J90025040	PRESSURE KIT, PUMP TO VALVE	1
	D72000025F003	"HOSE R2T G1" " FD-F90 L=2500MM"	1
7a	Y109032404401	GEAR PUMP, 90CC BI-ROTATIONAL, 4 HOLES	1
7b	Y110032404401	GEAR PUMP, 100CC BI-ROTATIONAL, 4 HOLES	1
7c	Y111032404401	GEAR PUMP, 110CC BI-ROTATIONAL, 4 HOLES	1
7d	Y112032404401	GEAR PUMP, 120CC BI-ROTATIONAL, 4 HOLES	1
8	J8G100001	QUICK RELEASE COUPLINGS KIT	1
	D401G01000001	"THREADED TYPE G1" " FEMALE"	1
	D401G01000002	"THREADED TYPE G1" " MALE"	1

### OPTIONALS

● Penta Body Clamp  See page 32



# Trailer ► HF 169 5 FRONT MOUNT CYLINDER



SEAL KIT CODE

**K241001695001**

SLIDER KIT CODE

**K141001695001**L<sub>tot</sub> BODY LENGTH

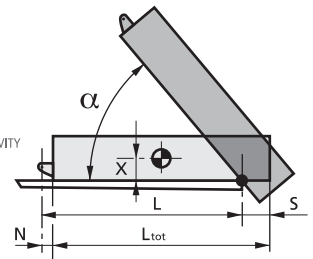
S REAR HOVERHANG

L PIVOT LENGTH

X VERT. POS. CENTRE OF GRAVITY

N BRACKET LENGTH

α BODY TILTING



## Tipping Weight [ton]

L <sub>tot</sub> [mm]	S [mm]	L [mm]	α [°]	X [mm]		
				400	700	1000
8200	200	8160	45	39	42	45
	500	7860	47	46	50	54
	800	7560	49	56	61	65
7850	200	7810	47	45	48	52
	500	7510	49	55	64	68
	800	7210	51	59	64	68
7500	200	7460	49	52	55	59
	500	7160	52	56	60	65
	800	6860	54	62	67	73

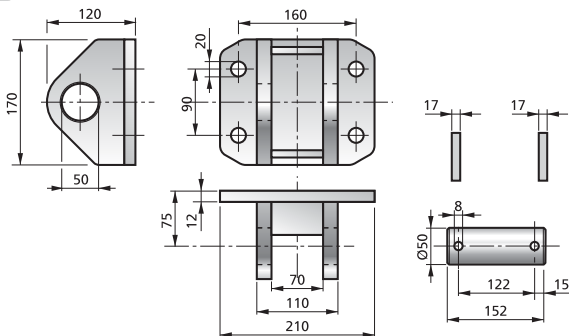
Measured @ maximum pressure of 200 bar and N = 160 mm  
Data ref. to cylinder 4112801695010

## TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]
HF 5420 169 5	4112801695010	5	5420	204	75.4	200	<b>39-73</b>	1470	1369
HF 5800 169 5	4113601695010	5	5800	215	80.6	200	<b>39-73</b>	1545	1444
HF 6170 169 5	4114301695010	5	6170	226	85.8	200	<b>39-73</b>	1620	1519
HF 6720 169 5	4116001695010	5	6720	250	93.5	175	<b>39-64</b>	1790	1689
HF 7120 169 5	4116801695010	5	7120	265	99.1	150	<b>35-55</b>	1870	1769



### CYLINDER SUPPORT UPPER

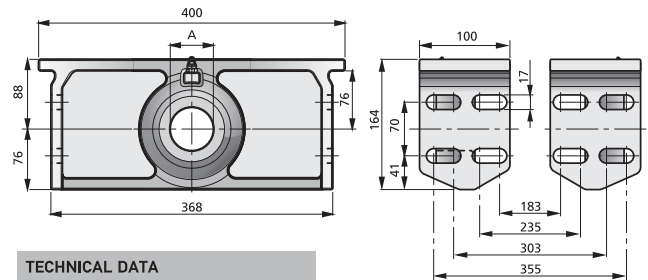


#### TECHNICAL DATA

MODEL	CODE	MASS [kg]
SUPP.HF60	A40050013	10



### CYLINDER SUPPORT LOWER PAIR

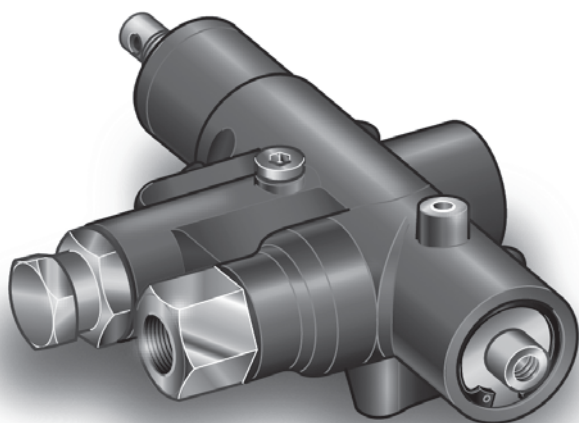


#### TECHNICAL DATA

MODEL	CODE (pair)	A [mm]	MASS [kg]
SUPP. PAIR HF 60	A90060003	60	22



# ► HT-VALVE DM160 TIPPING VALVE



## DECODING

<b>U</b>	<b>04</b>	<b>G100</b>	<b>P200</b>	<b>01</b>
Basic Code	Air Operation	Port	Setting	Serial

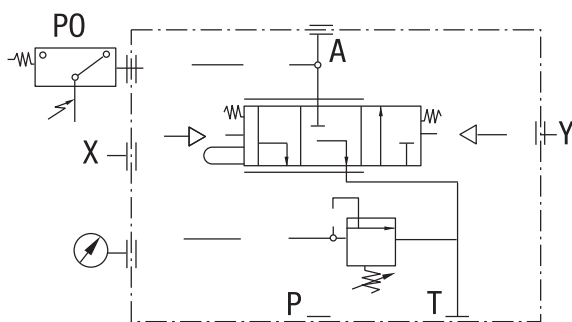
## TECHNICAL DATA

FLOW RATE	[lt/min]	160
MAX WORKING PRESSURE	[bar]	350
MAX PEAK PRESSURE (< 0.1s)	[bar]	500
T PORT MAX PRESSURE	[bar]	30
MINERAL OIL		ISO VG 46

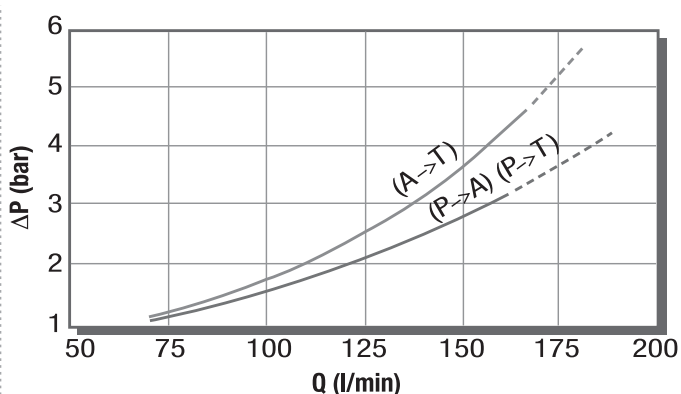
FLUID TEMPERATURE	[°C (°F)]	-25 / +80
VISCOSITY RANGE	[cSt]	12 - 100
FILTERING ISO 4006 βx=75	[μm]	20-17 25
WEIGHT	[kg]	8 - 9
PNEUMATIC WORKING PRESSURE	[bar]	12

- Single acting hydraulic tipping valve with oil flow of 160 l/min, pneumatically controlled.
- Available in two versions: DL with double fixed rising/lowering speed (normal and slow) or proportional DP.
- Inlet check valve and overpressure valve are built-in.
- Concerning overpressure safety device three different versions are available: adjustable, with interchangeable cartridge and switch (either with 2 or 3 different pressure settings).
- Equipped with end-of-stroke device.
- Flange connection to tank or to chassis.
- Manometer threaded hole provided.
- Several other optional versions available (ordering code).

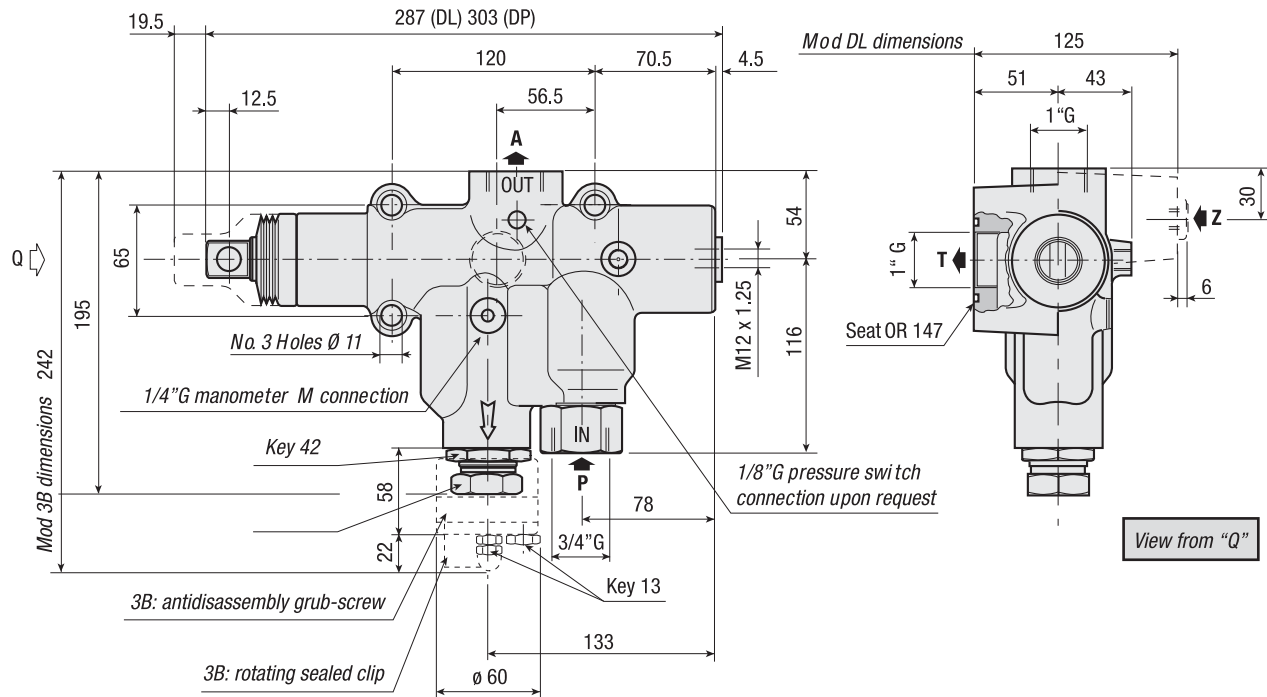
## FUNCTIONAL DIAGRAM



## PRESSURE DROP

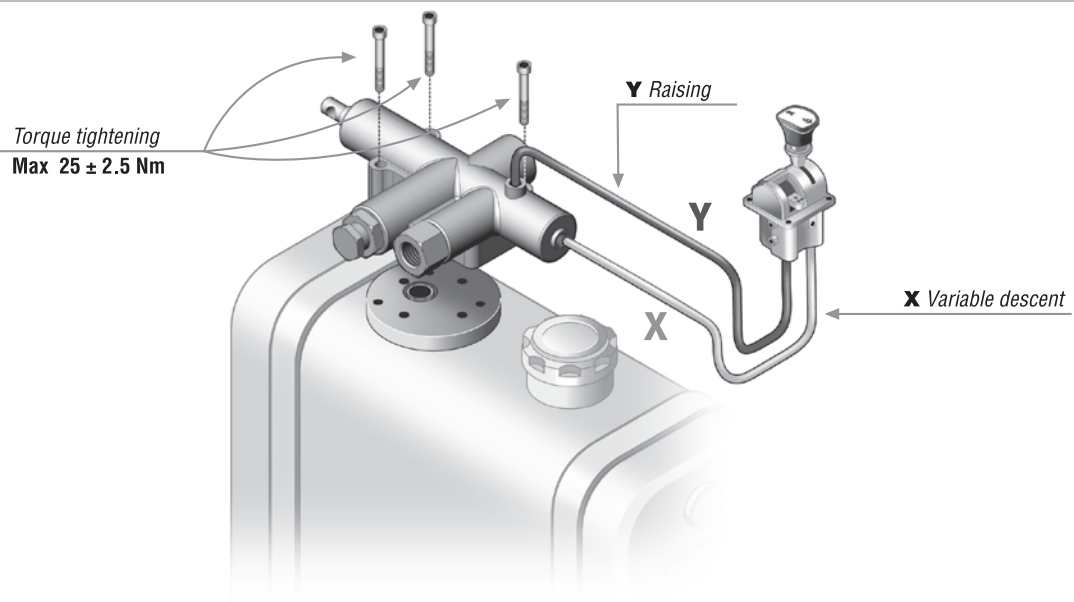


## Standard Version



DESCRIPTION	CODE
Pressure switch	DK0F09

## STUD KIT FOR TANK MOUNTING



DESCRIPTION	CODE
Complete valve Kit	J3G100036 (U04G100P20001 + J60160001)
Filter and plate fitting valve Kit	J60160001 (see pag. 27)

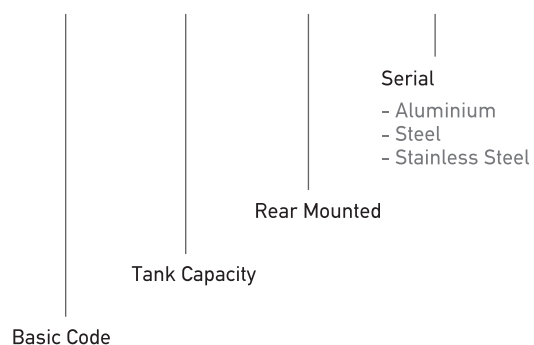
## ► DC5 OIL TANK



Rear mounted with provision for return filter

### DECODING

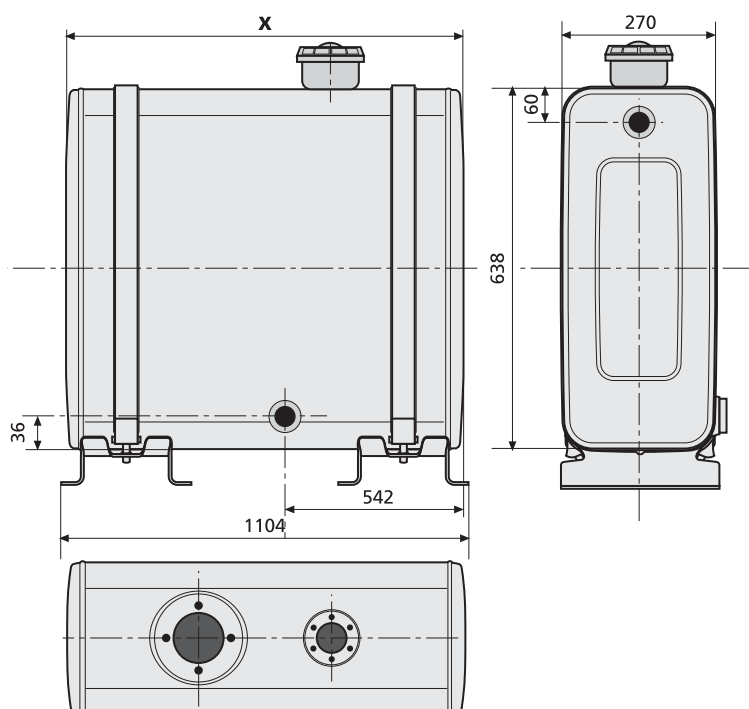
**DC 0160 001 0000**



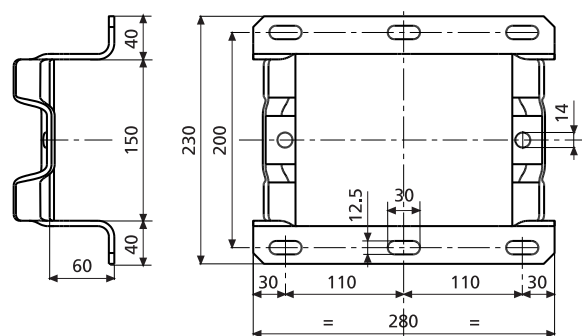
### TECHNICAL DATA

CODE	MATERIAL	CAPACITY [lt]	X
DC01600010001	Acciaio - Steel	160	1084
DC01600010002	Alluminio - Aluminium	160	1084
DC01600010003	Acciaio Inox - Inox Steel	160	1084

Metallic oil tank - standard colour: BLACK (other versions and accessories upon request)



### SUPPORTS



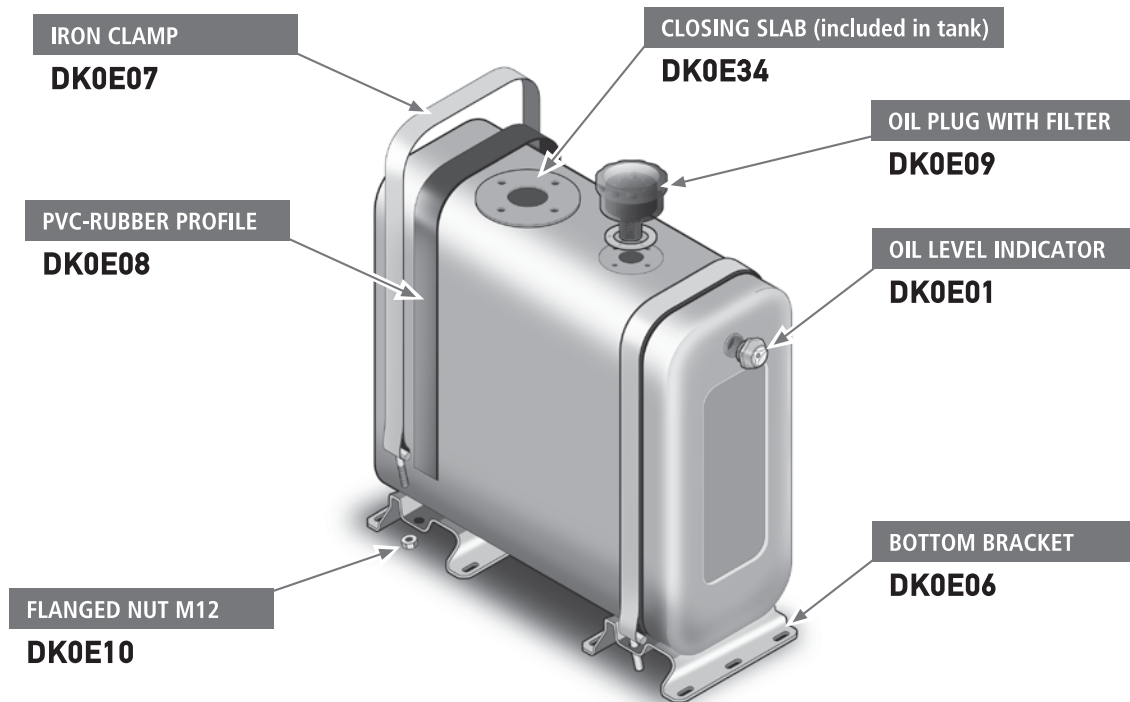
### NOTES

The tank will be supplied with ball valve 1"1/2 M/F conical with butterfly handle.  
The tank will be supplied without filter and plate for mounting valve (optional).

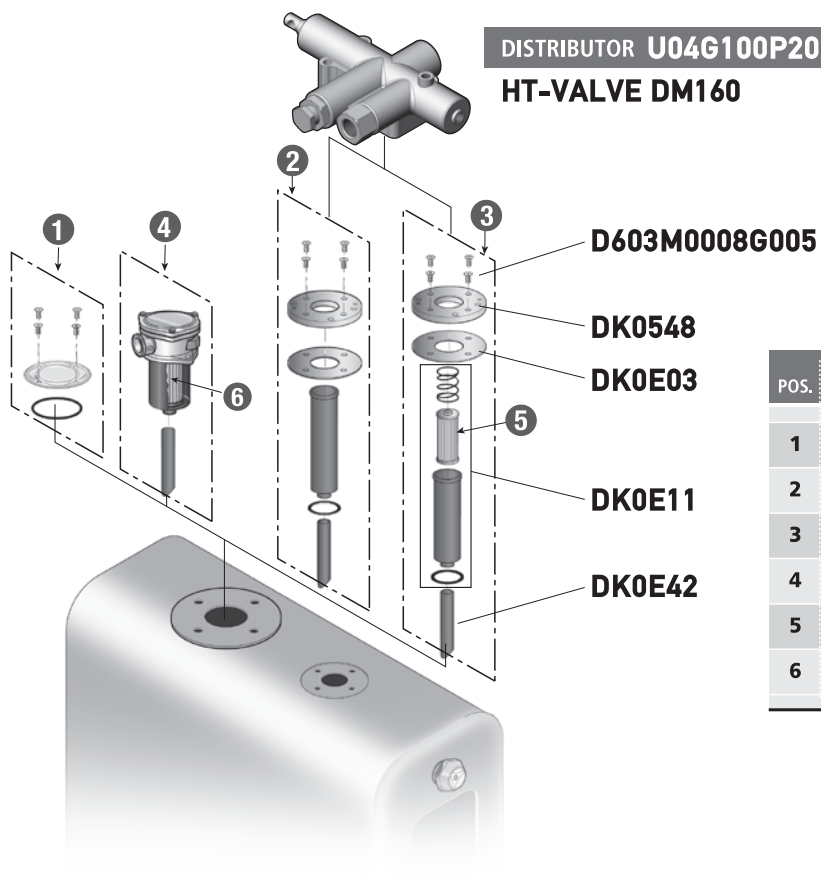
### BALL VALVE CODE

**D408G01120002**

## COMPONENTS (Included)

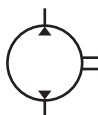
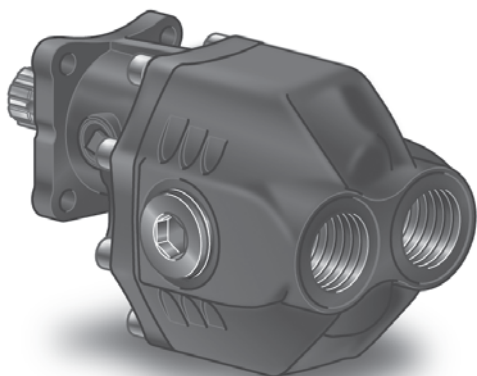


## POSSIBLE CONFIGURATIONS WITH HT-VALVE DM160



POS.	DESCRIPTION	TANK CAPACITY	CODE
1	Closing Plate (included in tank)		DK0E34
2	Distributor mounting plate	160	J60160002
3	Distributor mounting plate with filter	160	J60160001
4	Filter	160	DG00800702
5	Metallic cartridge 60 micron		DK0E30
6	Paper cartridge 25 micron		DK0E31

# ▶ HP-GEAR Y1-17 GEAR PUMP



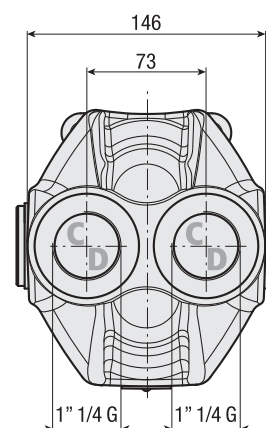
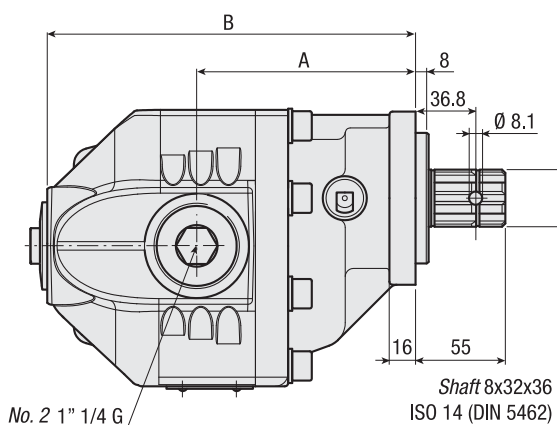
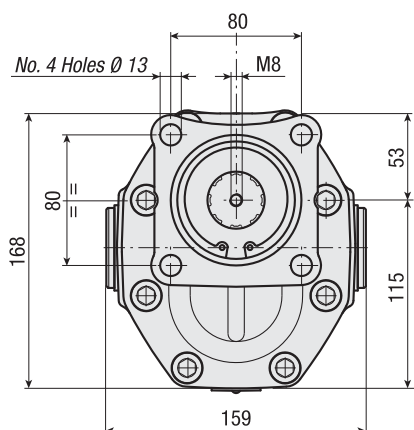
## DIN 5462 SE

### DECODING

Y1	XXX	3	2	4	0	44	00
Basic Code	Displacement	Rotation 3= Bi-rotational	Special Options Rear Outlet	Ports			Serial

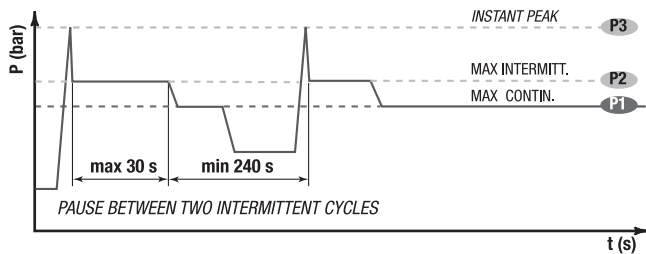
### TECHNICAL DATA

CODE	ROTATION	DISPLACEMENT [cm <sup>3</sup> /rev.]	A [mm]	B [mm]	C INLET/OUTLET	D OUTLET/INLET	WEIGHT [Kg]
Y109032404401	Bi-rotation	88.8	134	226	1" 1/4 G	1" 1/4 G	20.5
Y110032404401	Bi-rotation	98.5	138	230	1" 1/4 G	1" 1/4 G	21.5
Y111032404401	Bi-rotation	108.3	136	234	1" 1/4 G	1" 1/4 G	22
Y112032404401	Bi-rotation	119.2	141	239	1" 1/4 G	1" 1/4 G	22.9



## TECHNICAL DATA

### EXAMPLE OF WORKING CYCLES



INLET PRESSURE	[bar]	0.7÷1.5
OPERATING VISCOSITY RANGE	[cSt]	12÷100
MAX PEAK PRESSURE (< 0.1s)	[°C (t)]	-10° ÷ +80°

WORKING PRESSURE	CONTAMINATION NAS 1638		$\beta_x = 75$
$\leq 200$ bar	12	21-18	40 $\mu\text{m}$
$\geq 200$ bar	11	20-17	25 $\mu\text{m}$

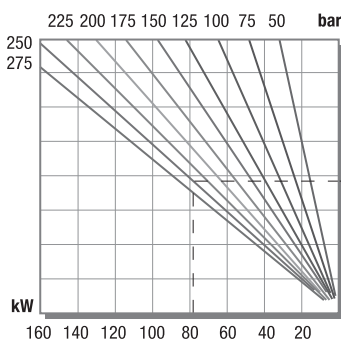
◀ RECOMMENDED FILTERING (return or outlet)

			Y109032404401 Bi-rotational	Y110032404401 Bi-rotational	Y111032404401 Bi-rotational	Y112032404401 Bi-rotational
DISPLACEMENT	Vg	[lt/min]	88.8	98.5	108.3	119.2
MAX CONTINUOUS OPERATING PRESSURE	P1	[bar]	250	225	210	210
MAX INTERMITT. OPERATING PRESSURE (max 30 s)	P2	[bar]	275	250	230	230
MAX PEAK PRESSURE (< 0.1s)	P3	[bar]	290	265	245	245
MAX INTERMITTENT SPEED ( $P \leq 20$ bar)	n3	[r.p.m]	2200	2200	2200	2000
MAX CONTINUOUS SPEED ( $\leq P1$ )	n1	[r.p.m]	1800	1800	1800	1500
MIN INTERMITTENT SPEED ( $\leq P2 \times 0.5$ ) (max 30 s)	n4	[r.p.m]	300	300	300	300

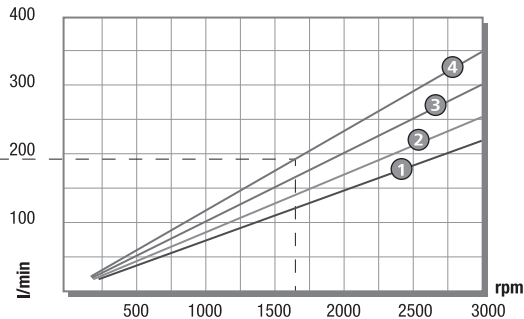
## DIAGRAMS

Specifications Refer to OIL TYPE ISO VG 46 A 50° ( $\nu = 30$  cst)

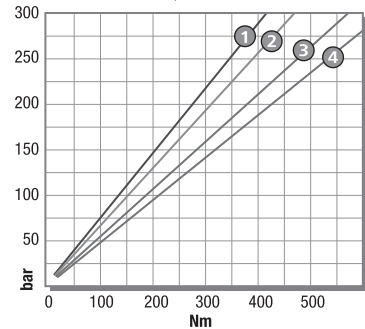
### ABSORBED POWER



### CAPACITY



### DRIVE TORQUE



- ① COD. Y109032404401
- ② COD. Y110032404401
- ③ COD. Y111032404401
- ④ COD. Y112032404401

# HC-PNEUMATIC D9-6 PNEUMATIC CONTROL



## Three Sections

### DECODING

**D902 G018 3 03**

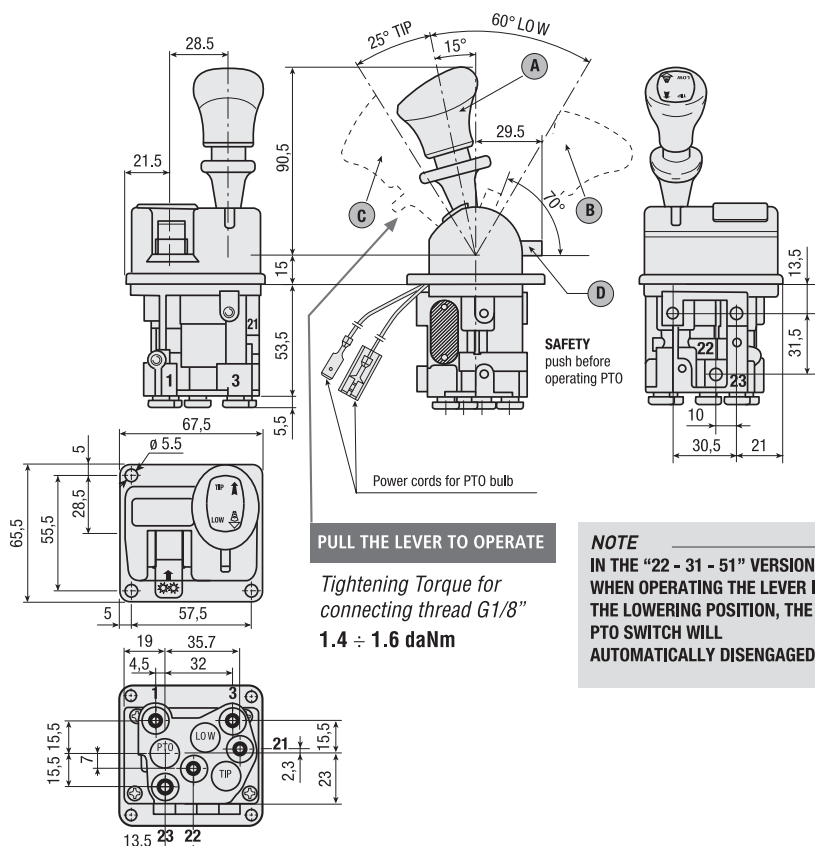
Basic Code | Ports | Sections Number | Serial

### D902G018303 SPECIFICATIONS

- Pneumatic distributor with proportional lowering control and automatic PTO disengagement.
- Tristable lever (three stable positions: rest, low, tip). With automatic PTO disengagement when body is lowering.

### TECHNICAL DATA

WORKING MEDIUM	Air	OPERATIVE TEMPERATURE	[°C]	-40°C / +80°C
MAX WORKING PRESSURE	[bar]	12	NOMINAL DIAMETER	[mm]
OPERATING VOLTAGE	[V DC]	24	CONTACTS	Normally Open

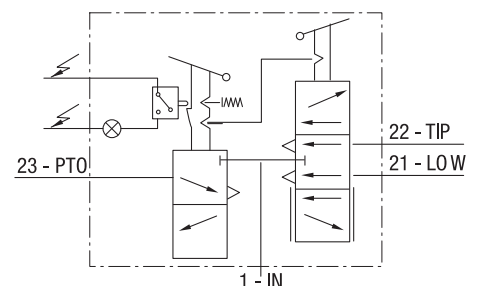


### LEVER POSITION

- A** Rest position (with lock)
- B** Operation PORT 21
- C** Operation PORT 22
- D** Operation PORT 23 (with stop)

### AIR PORTS

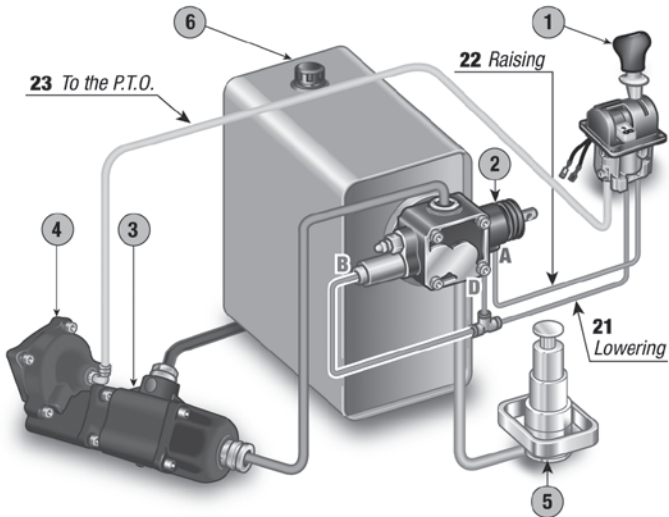
- 1** Compressed air supply (**IN**) G 1/8"
- 21** Control lowering (**LOW**) G 1/8"
- 22** Control tipping (**TIP**) G 1/8"
- 23** Power take off engagement (**PTO**) G 1/8"
- 3** Free exhaust (**EX**) M5



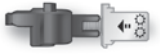




### EXAMPLE OF HOOK-UP

- |                     |                  |
|---------------------|------------------|
| 1 PNEUMATIC CONTROL | 4 POWER TAKE OFF |
| 2 DISTRIBUTOR       | 5 CYLINDER       |
| 3 PUMP              | 6 OIL TANK       |

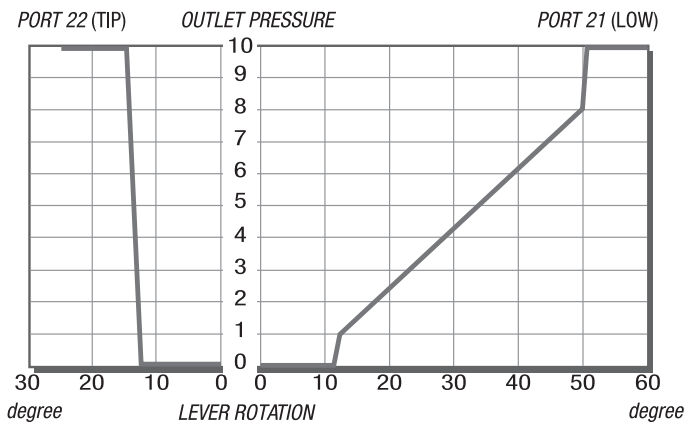


### NM3 SPARE PARTS KIT

CODE	DESCRIPTION
DK0B15	PTO lever Kit with disengagement 
DK0B17	Lever Kit NM 
DK0B14	Lever with cam 

### DIAGRAM

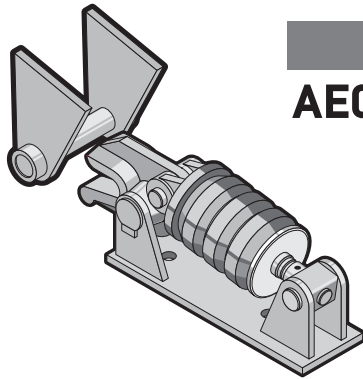
DIAGRAM REFERRED TO SUPPLY PRESSURE = 10 bar





## ► OPTIONALS

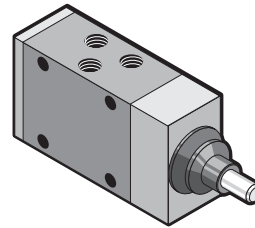
### PENTA BODY CLAMP



CODE

**AE0110001**

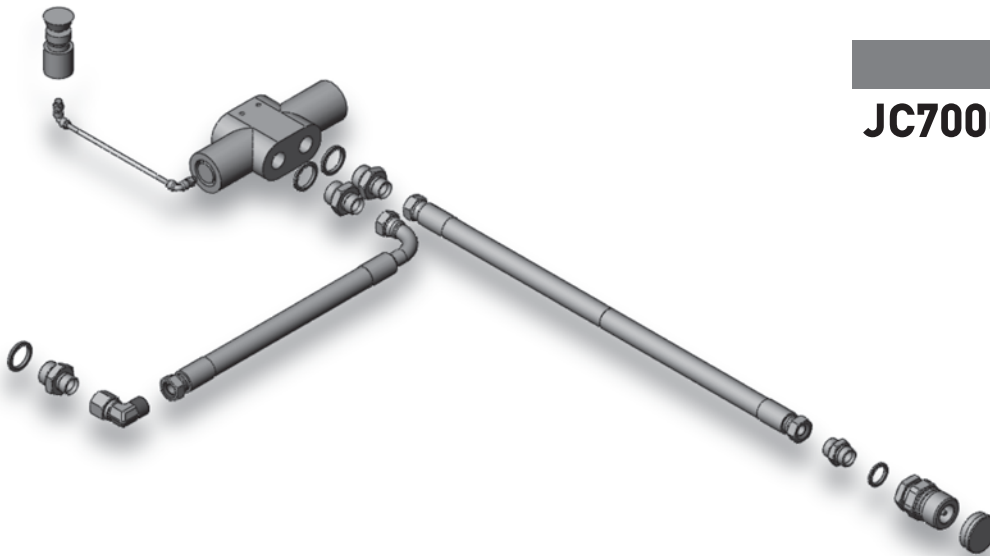
### END OF STROKE DEVICE



CODE

**JD0001**

### TRUCK-TRAILER KIT



CODE

**JC70000000004**

## ► UNIVEX



of spare parts for European commercial vehicles. We also supply high quality components for Russian vehicle manufacturers.

We have great experience working in this field for more than 15 years. We have contacts with almost all trailer manufactures and deal with all key producers.

# 1

### **OUR EXPERIENCED TEAM**

Our 52 staff are trained to the highest standard, offering you peace of mind with our services.

# 2

### **BIG IS BETTER**

Our store facility is 2000 sq meters.

# 3

### **STRONG FINANCIAL RATING:**

Our Stock Amount is 150 mln rubbles (3.7mln euro)

# 4

### **VERY HIGH STANDARD OF PRODUCT DELIVERY**

80t of goods and 4 complete semitrailers coming each week.

# 5

### **GREAT PARTNERSHIP**

Our main partners are exclusively Worldwide leaders in their sectors: PENTA, GIGANT, WABCO, ZF, HALDEX, BLACKTECH, PE, SKF, PARLOK etc.

Our main customers are truck/bus builders, trailer manufacturers, van producers, tipper builders. TONAR, Group GAZ (LIAZ, PAZ, KAVZ), POLITRANS, TverSroyMach, SpecPricep, AVTOMASTER, IPV, RosSpecPricep, UralAvtoPricep, AP-KAMAZ (Stavropol) etc.



# УНИВЕКС

ВНИМАНИЕ К ДЕТАЛЯМ

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[www.univex.ru](http://www.univex.ru)

# ▶ WARNINGS

**EN** The following catalogue is introducing the range of H.S. Penta cylinders and wet kits for tipping application. For an optimum and maximum usage of the cylinder, H.S. Penta is suggesting the fitment in combination with H.S. Penta wet kits. H.S. Penta wet kits are designed for maximum efficiency and best response in every circumstances. The complete body tipping system is consisting of a cylinder and a hydraulic system which includes: pump, oil tank with return filter, hydraulic distributor (tipping/control valve) provided of a maximum valve (relief valve) pre-set, pneumatic cab control and hydraulic/pneumatic connections. On request it can be completed with: PTO depending on the gear box model, end of stroke device, oil divertors for truck and trailer application, cylinders for tail-door hydraulic locking, cylinders for hydraulic tail-door opening, power packs and many other optional devices. Telescopic cylinders and wet kit are commonly installed on dumping vehicles and are devices which are intended to provide only a lifting force. The machinery into which the cylinders and wet kit are incorporated must comply with the requirements of the in force directives and norms. The cylinder is not a structural member, and is not designed, nor intended to provide stability to the dumping vehicle. Failure to comply with the following instructions will void the product warranty and cancel any liability for any consequence.

**Using Conditions:** telescopic cylinder are designed to suit tipping operation on tipping vehicle bodies in order to obtain a progressive unload of the material contained in the body, along the full stroke of the cylinder in respect of the using conditions.

The weight of the body in addition to the weight of the material loaded on the body results in the total weight to be tipped-up. The amount of mentioned weights (values) are indicating maximum performances which can be obtained during a tipping time in normal conditions. The cylinder is dimensioned to support stresses on its longitudinal center line and must not be subjected to any other different kind of mechanical stress (e.g.: side loads).

The aim of the wet kit is to drive the cylinder and consequentially the tipping body. The wet kit main components (such as pump, tipping valve and hoses) are dimensioned to withstand cylinder maximum pressure and tipping capacity. The oil tank is dimensioned in order to have sufficient oil capacity to feed: cylinder, hydraulic components and hoses without interruption of the cylinder operative conditions.

**The following are essential hints for the correct assembling of the cylinder and wet kit:**

1. During the assembling operations, ensure that cylinder and hoses are properly protected from any contamination such as weld drops, metal shavings or any other foreigner particles.
2. Make sure to hydraulic circuit is always provided of a maximum valve (relief valve). All tipping valves supplied by H.S.Penta are provided of the maximum valve (relief valve) which is set by H.S. Penta to the cylinder operative pressure in order to benefit of the optimum operation of the circuit. **It is strictly prohibited to tamper the original valve setting.**
3. Take care of the hydraulic circuit ensuring the oil tank and hoses are perfectly cleaned and by using premium quality hydraulic oils for hydraulic circuits. Oil tanks supplied by H.S.Penta are provided of a return filter (filtration 25µm) able to keep the circuit clean by contaminations, it is recommended to check the grade of clogging of the filter and its replacement every six months. Ensure to use only hydraulic oils which are fully meeting the requirements specified in endosure: "Installation manual hydraulic kit for tractors". Never use coolants or additives and never mix different substances together. **Replace the oil every year.**

4. The body must never lay on the cylinder when in rest position. The cylinder must always be fitted with 20mm pull-out.
5. Ensure that the axial play between the inner surface of the brackets and the overbosses of the cylinder is always inferior to 2mm.
6. Never wash the cylinder with high pressure water guns and arrange proper protection during welding or grinding operations. It is strictly prohibited to connect the welding machine ground cable to the cylinder.
7. Weekly: grease all cylinder swivelling parts and its accessories. Monthly: check the fixing torque of the bracket and chassis cradles bolts.
8. Never leave the body raised (if not for normal tipping procedures) to avoid damages to the cylinder.
9. Check frequently the correct functioning of the tipping valve and end of stroke device (if available).
10. To avoid sudden falls of the body (eg.: in case of hose burst or sudden fitting disconnection), on H.S.Penta cylinders it is possible to fit a C.B.S. device (Cylinder Blocking System) produced and patented by H.S.Penta.
11. To manage smooth and constant lowering speed of the body independently from the amount of payload, H.S. Penta cylinders can be fitted with V.C.D. Device (Descent Control Valve) produced by H.S.Penta.
12. All front mount cylinders produced by H.S. Penta have the last step (smaller inner) chromium plated.
13. All H.S. Penta cylinders are painted with a anti-rust synthetic primer with vinyl co-polymer base.
14. All pumps are mono-directional. For the correct use in combination with PTO's it is necessary to check the correct rotation sense. Before starting the circuit, make sure the pump is completely filled up with oil either by bleeding the air from the drainage plug or filling it up in advance. During normal system operation it is recommended a suction pressure of 0.7-1.5 bar, a working viscosity range of 9-100cSt and a fluid temperature range of -25°/+80°C. Screw on the pump only gas-cylindrical (BSP) frontal sealing fittings, do not fit any fittings with conical thread (NPT).
15. Hoses: avoid elbows or restrictions. It is not recommended to put any filtration on the suction line as it can result in pump cavitation. All hoses are dimensioned to suit the cylinder working pressure.

**The failure in respecting one or more of the above recommendations and rules is resulting in the automatic expiry of the warranty on both cylinder and wet kit.**

**Further information please see "Hydraulic cylinder for tipping equipment user & maintenance manual - General safety regulations".**

**Further information please see "Installation manual hydraulic kit for tractors".**

# ► GUARANTEE

## 1. Guarantee conditions

- 1.1 H.S.PENTA S.P.A. (hereinafter referred to as the "Company") guarantees the satisfactory operation of its hydraulic components, hydraulic cylinders, and respective accessories (hereinafter jointly referred to as the "Products") and the absence of flaws and defects in the same within the limits specified in these General Guarantee Conditions.
- 1.2 This guarantee of satisfactory operation has a validity of two (2) years from the date of sale of the Products.
- 1.3 The Company guarantees the conformity of the Products exclusively to Italian and European Community standards.

## 2. Guarantee coverage

- 2.1 Without prejudice to the content of the following Article 2.2 regarding hidden defects, the Products will be considered as having been accepted by the purchaser whenever within 5 days from delivery such latter has not provided the Company with written notice of the presence of flaws and/or defects.
- 2.2 Upon pain of relinquishing rights to coverage under the guarantee, the purchaser must provide the Company with written notice of the defect in conformity and/or flaw in the Product or part of the same, specifying the nature of the same in detail within 8 days of the date in which the purchaser has observed such defect in conformity and/or flaw.
- 2.3 The defective Products reported in such notice as per the sense and effect of Article 2.2 above must be conserved by the purchaser for the purpose of examination by the Company.  
Following written request from the Company, the purchaser must send the defective Product(s) carriage paid to the latter or the party indicated by the same; whenever after the Company's examination, the Product is declared defective and as such is covered by these General Guarantee Conditions, the Company will reimburse the purchaser for the costs of shipping, while remaining expressly specified that such shipping costs must be within the average reference costs.  
The purchaser relinquishes the right to coverage under guarantee whenever he does not permit every reasonable inspection of the Product requested by the Company or whenever after receiving written request from the Company for the return of the Product he fails to do so within 30 days of receiving such request.
- 2.4 Following transmission of due notice by the purchaser performed as per the sense and effect of previous Article 2.2, after ascertaining the existence of the defect or flaw, the Company can take any of the following courses of action at its own discretion:
- (a) provide the purchaser with Products in replacement of those defective free-of-charge;
  - (b) repair the Products directly or through third parties at its own expense; or
  - (c) reimburse the price paid by the purchaser for the Products ascertained defective.
- It is hereby agreed that any Products supplied in replacement of those proven defective must be shipped "ex-works" and that the defective Products returned to the Company will remain the property of such latter.
- 2.5 With the exception of those mentioned in Article 2.4 above, the costs and expenses incurred by the replacement or repair of the defective Products must be borne by the purchaser.  
For mere purposes of example without excluding others, the purchaser must bear the costs for:
- (a) consumptions caused by the removal of the defective Products from the machinery in which they were installed and the subsequent re-installation of the same;
  - (b) the transport of materials and/or equipment;

- (c) lubricants and/or expendable materials necessary for the replacement or repair of the defective Products;
- (d) the re-painting of the Products;
- (e) the transfer expenses of the Company's personnel during checking for flaws and defects reported by the purchaser.

2.6 Nothing will be due to the purchaser by way of compensation for the time that the machinery in which the defective Products are installed remain out of operation for the repair or replacement of the same, and the Company must be considered expressly released from liability for any direct or indirect damage, cost or expense derived by such machinery inactivity.

2.7 For the parts of the Product replaced or repaired, the guarantee will be automatically extended for a new 2-year period from the date of such replacement or repair.

2.8 Except in case of fraudulent intention or serious neglect, the Company will not be liable in any way for any direct or indirect damage, cost, loss, or expense to persons and/or property derived from the operation and use of the Products and/or the interruption of activity of the machinery in which the Products are installed, given that the guarantee specified in Article 2 is the only remedy in the purchaser's favour.

## 3. Guarantee exclusions

- 3.1 The Company will not provide guarantee coverage for defects in conformity and/or flaws in the Product or any of its parts for any of the following cases:
- (a) reasons due or linked to normal wear;
  - (b) the failure of the purchaser to correctly perform the procedures for the installation, use (or equivalent), and maintenance of the Products specified in the Use and Maintenance manual provided by the Company together with the Products;
  - (c) the incorrect use and/or operation of the Products or accident caused by the negligence, inexperience, or imprudence of the purchaser;
  - (d) the inadequate maintenance of the Products by the purchaser or modifications, repair and/or replacement made by the same without the Company's written consent;
  - (e) shock or impact against the vehicle or machinery in which the Products are installed; and
  - (f) causes other than defects in fabrication and/or engineering, working, and/or materials.
- 3.2 Guarantee coverage will also be excluded whenever:
- (a) the Company is not placed in the conditions to promptly perform the necessary repair or replacement of defective Products;
  - (b) the Products are modified by the purchaser;
  - (c) the Products are used after the discovery of a flaw or defect;
  - (d) Repairs that are not authorized by the Company are made;
  - (e) the flaw or defect regards paint coatings and/or is represented by the corrosion of parts of the Product coated or not coated.

## 4. Applicable Law - Controversy

- 4.1 These General Guarantee Conditions are regulated by Italian Law with the express exclusion of the application of the United Nations Convention on international movable property sales contracts.
- 4.2 Any controversy derived from these General Guarantee Conditions, including those regarding their validity, interpretation, execution and resolution that cannot be settled out of court will be subjected to the exclusive decision of the Court of Ravenna, Italy.

"General guarantee conditions" 19/11/2008

**PENTA®**

Interpump Hydraulics International

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