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Special Duty Vehicles - technical Distribution

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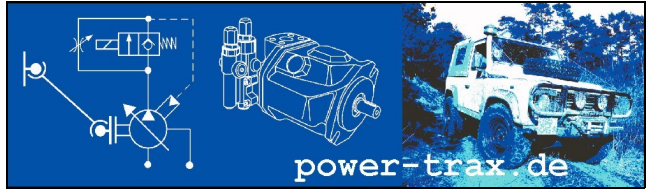
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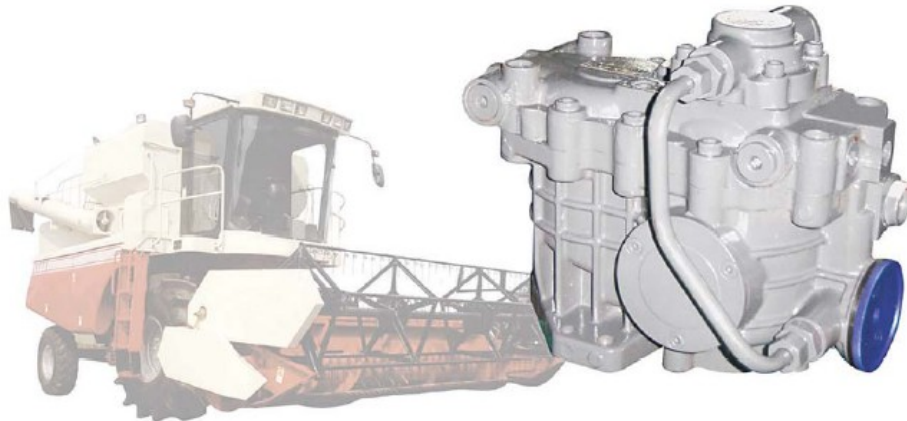
Dietrich-Bonhoeffer-Str. 28

D-86609 Donauwoerth



Hydrostatic Gearbox Systems

for custom drivetrains and vehicles

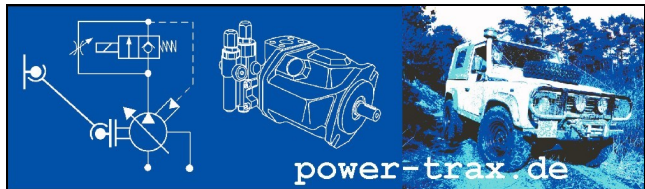


2014 Catalogue

All prices net, excl. VAT - General terms and conditions of business apply

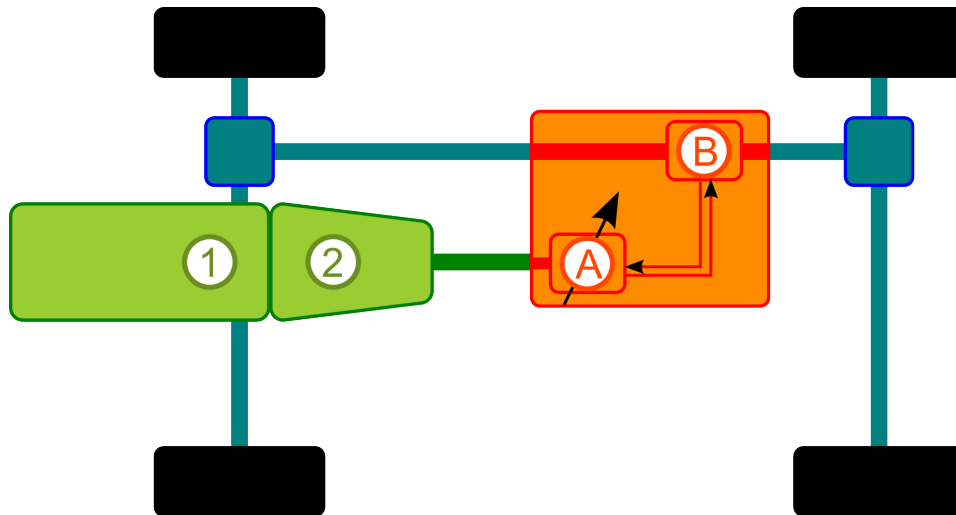
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Basics on Hydrostatic Drivetrains

Here we have some basic introduction in the working principle of a hydrostatic gearbox and drive.



Pic 1: Hydrostatic Drive
1: Engine - 2: Clutch - 3: Transfer Gearbox - A: variable pump - B: hvdraulic motor. fullv reversable

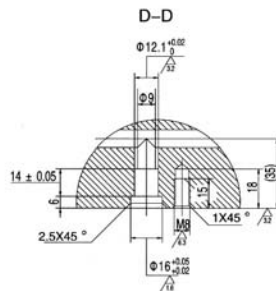
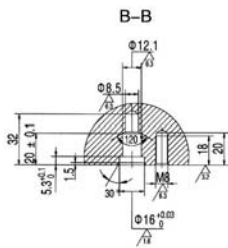
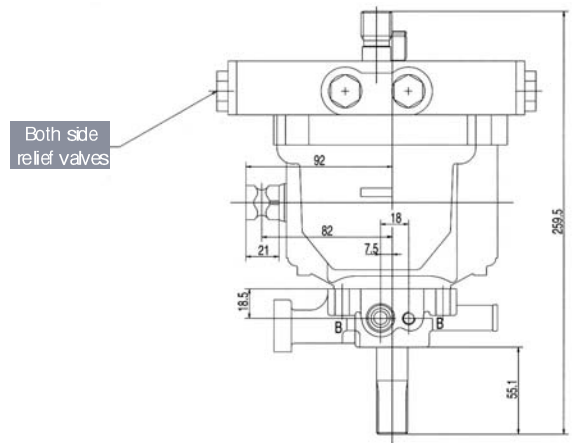
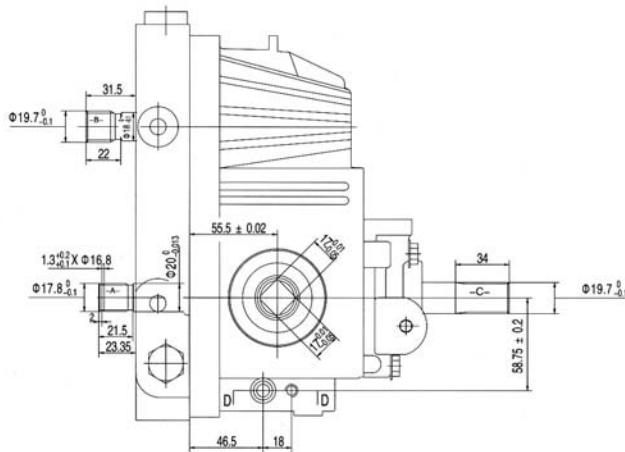
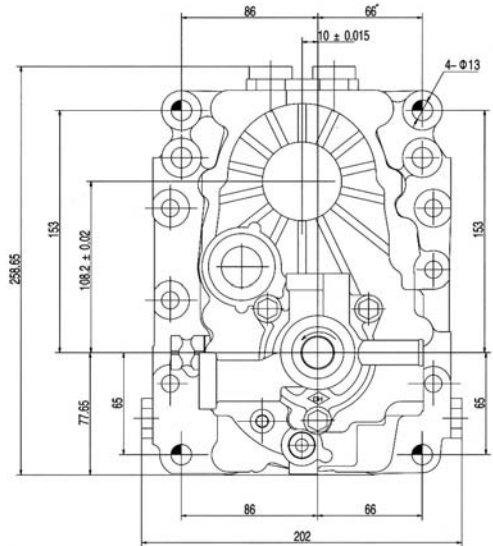
A hydrostatic drive and gearbox consists of these major parts:

Part	Details
1	Engine / prime mover: generates mechanical power. The engine can run diesel, petrol, gas or similar. It is even thinkable to have a water wheel or other sources of rotating power to adapt to a hydrostat to generate versatile power.
2	Clutch to seperate the engine from the hydrostatic gearbox
A	The internal hydraulic pump of the Hydrostat. The pump generates an oil flow that is complete variable backwards and forwards by mechanical control
B	The internal hydraulic motor. This motor is bidirectional and drives the output shaft forward or backward, depending on the oil flow. In total this system gives a fully-reversable, fully variable transmission-ratio gearbox.

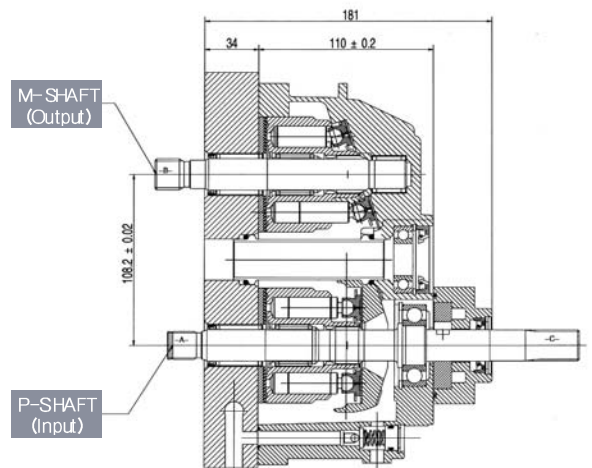


Hydro-Static Transmission 22kW 105Nm

T18C



SPLINE SPEC			
Section No.	A	B	C
Module	1	1.25	1.25
Number of Teeth	16	14	14
Pressure Angle	20°	20°	20°
P.C.D.	Ø16	Ø17.5	Ø17.5
Major DIA	Ø17.8 ⁰ / _{-0.1}	Ø19.7 ⁰ / _{-0.1}	Ø19.7 ⁰ / _{-0.1}
Minor DIA			
Profile Shift	0.8	0.8	0.8
Pin DIA	Ø1.8	Ø2.25	Ø2.25
O.P.D.	Ø19.715 ^{-0.110} / _{-0.181}	Ø22.087 ^{-0.107} / _{-0.129}	Ø22.087 ^{-0.107} / _{-0.129}
Span Measurement (3 Teeth)		10.155 -0.062 / -0.100	10.155 -0.062 / -0.100



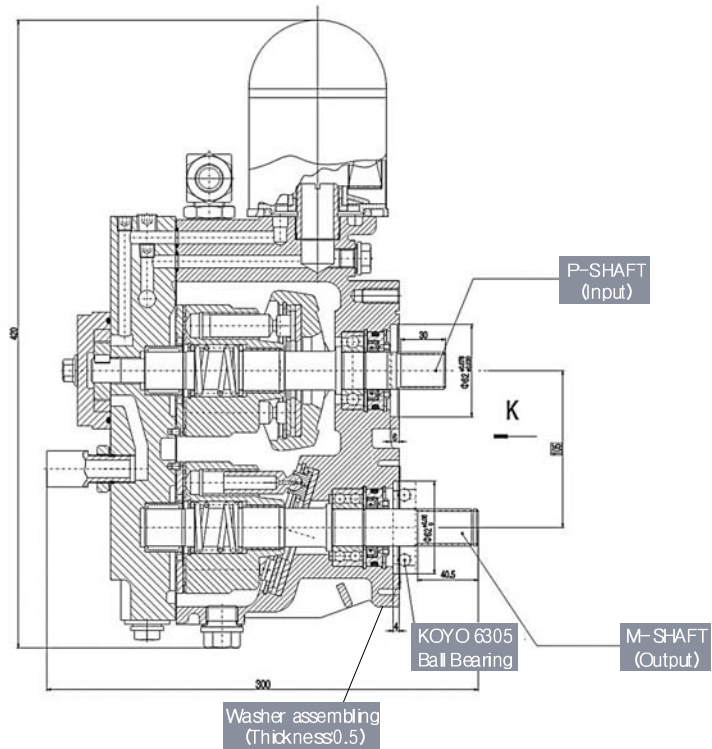
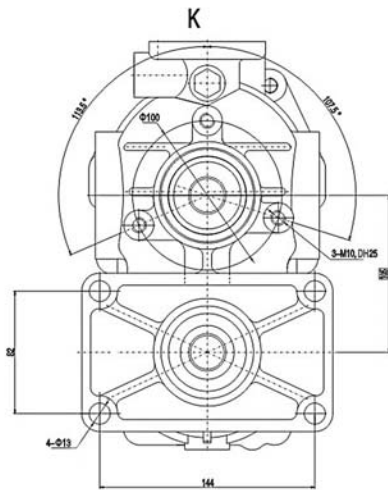
HST18C SPECIFICATION

MODEL	DHPVMF-18-L-01		NO.			
COMPANY	"DAIHO HYDRAULIC KOREA"		TYPE AND USE	TRACTOR · TRAVELING		
ITEM		SPECIFICATION		REMARKS		
BASIC SPEC.	DISPLACEMENT	PISTON PUMP	0 ~ 183 Cm ³ /rev			
		PISTON MOTOR	183 Cm ³ /rev			
		CHARGE PUMP	6.2 Cm ³ /rev			
	PUMP LEVEL ANGLE		0 ~ ±0.30 rad (0 ~ ±17deg)		Power ≤30HP APPLYING TO DIESEL ENGINE	
	MOTOR LEVEL ANGLE		0.30 rad (17 deg)			
	CLOCKWISE or COUNTER CLOCKWISE FROM VIEW OF DIRECTION ROTATION					
	CHARGE CIRCUIT RELIEF SETTING PRESSURE 3000 min ⁻¹ (rpm)		0.49 ± 0.098 Mpa (5 ±1kgf/cm ²)			HYD.OIL VG46 STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)
	PRESSURE IN CASE		LESS THAN 0.098Mpa (1kgf/cm ²)			Max 0.924 Mpa(3kgf/cm ²)
	CHARGE PUMP SUCTION PRESSURE		LESS THAN -0.0196Mpa (-0.2kgf/cm ²)			LESS THAN 0.045Mpa(-0.46kgf/cm ²) AT LOW TEMPERATURE
	FILTER		10μm			EQUIPPED IN CHARGE CIRCUIT
STRAINER		150 mesh				
HYD.CONTAMINATION CLASSES		WITHIN NAS 9				
CUSTOMER SPEC.	INPUT SPEED		0~2600 min ⁻¹ (RPM)			STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)
	PRE-SSURE	HIGH RELIEF SETTING PRESSURE	30.9MPa±0.49MPa at 20L/min			
		CRACKING PRESSURE	28.7MPa at 3L/min			
	HYD.OIL		ISO VG 46			
	HYD.OIL TEMPERATURE AT CASE DRAIN		-10°C ~ + 90°C		-10°C ~ + 90°C / WITHIN 5 HOURS	
	PAINTING		PRIMARY PAINT		COLOR : BLUE	
	MAX.VIBRATION		LESS THAN 88.26 m/s ² (9G)			
	INSTALLATION POSITION		TRACTOR TRANSMISSION			
	ITEM		SPECIFICATION		REMARKS	
	GENERAL SPEC.	EFFICIENCY	VOLUMETRIC EFE	92.5%	at N= 3000min ⁻¹ ΔP=14.7Mpa(150kgf/cm ²) θ=0.30 rad (17deg)	BEST PERFORMANCE 46, 50°C
OVER EFE			73.5%			
		MAX : TABLE 1. MIN : WHEN STARTING		Min 0.022rad Max 0.052rad (1.3~3.0deg)	at N= 3000min ⁻¹	NEUTRAL ZONE, VG 46, 50°C
		RATE OF INPUT/OUTPUT SPEED		1 ± 0.03	at • ΔP= 0Pa (0kgf/cm ²) θ = Max rad	VG 46, 50°C
HOLDING TORQUE : TABLE 3 (TURNING LEVER HOLDING TORQUE)		-7.84~17.65N.m (-0.8 ~ ± 1.3kgf.m)	at N= 3000 min ⁻¹ ΔP = Min~19.65Mpa (Min~ 200kgf/m ²)	PERFORMANCE AT SHIPPING VG 46, 50°C		
HOLDING TORQUE : TABLE 4 (TURNING LEVER HOLDING TORQUE)		-11.76~27.4N.m (-1.2 ~ +2.8kgf.m)	at N= 3000 min ⁻¹ ΔP = Min~19.62Mpa (Min~ 200kgf/m ²) VG 46, 50°C	CONTROL PERFORMANCE SPEED AT SHIPPING 0.14rad/ sec (8.02°/sec)		
NOTE	TABLE.1	WHEN STOPPED, IF LOAD PRESSURE IS HIGHER THAN WORKING PRESSURE OF NEUTRAL VALVE, VALVE IS NOT CLOSED AND NO NEUTRAL RANGE IN THIS CASE, MOVE LEVER TO THE POINT PASSED FROM NEUTRAL RANGE, AND NEED TO STOP MAIN MACHINERY WITH MOVING STARTING NEUTRAL RANGE ON THE OPPOSITE SIDE				
	TABLE.2	VOLUMETRIC EFFICIENCY MEANS DECREASING RATE OF OUTPUT SPEED WHICH CHANGED BY PRESSURE RAISE AGAINST OUTPUT SPEED AT ΔP=0kg/cm ² OUT SPEED = INPUT SPEED x RATE OF INPUT/OUTPUT SPEED x VOLUMETRIC EFFICIENCY (%)100 (at θ = Max deg) ※THE VALUE IS CAUSED BY PRODUCING ERROR OF PUMP/MOTOR LEVEL ANGLE				
	TABLE.3	TURNING SHAFT HOLDING TORQUE OPERATING TORQUE TO INCREASE SWASH PLATE ANGLE : INDICATED BY + OPERATING TORQUE TO DECREASE SWASH PLATE ANGLE : INDICATED BY -				
	TABLE.4	TURNING SHAFT OPERATING TORQUE OPERATING TORQUE TO INCREASE SWASH PLATE ANGLE : NECESSARY TORQUE TO MOVE FROM MAX,SWASH PLATE ANGLE TO NEUTRAL (INDICATED BY +) OPERATING TORQUE TO DECREASE SWASH PLATE ANGLE : NECESSARY TORQUE TO MOVE FROM NEUTRAL TO MAX,SWASH PLATE ANGLE(INDICATED BY -)				



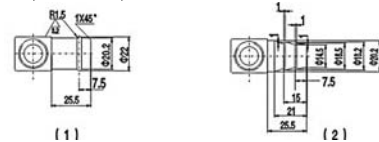
Hydro-Static Transmission 37kW 100Nm

T23C

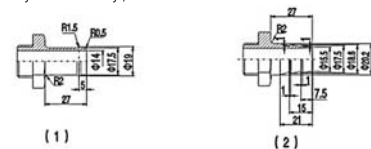


Except assembling measure of T23C attachment, Inlet & Outlet oil hose and electro motion shaft measure are as below.

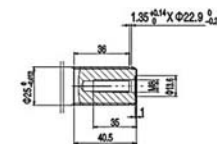
- There are two types of Inlet oil hose measure as below. Preferentially select type 1.



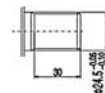
- There are two types of Outlet oil hose measure as below. Preferentially select type 1.



- Each spline specification of P-Shaft and M-Shaft is as following.

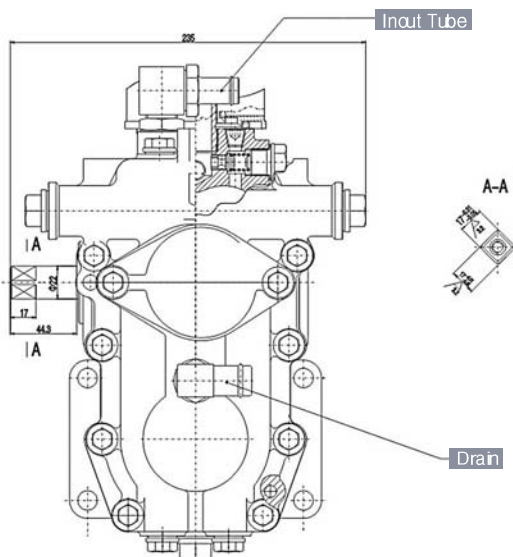


M-SHAFT (Output Shaft)



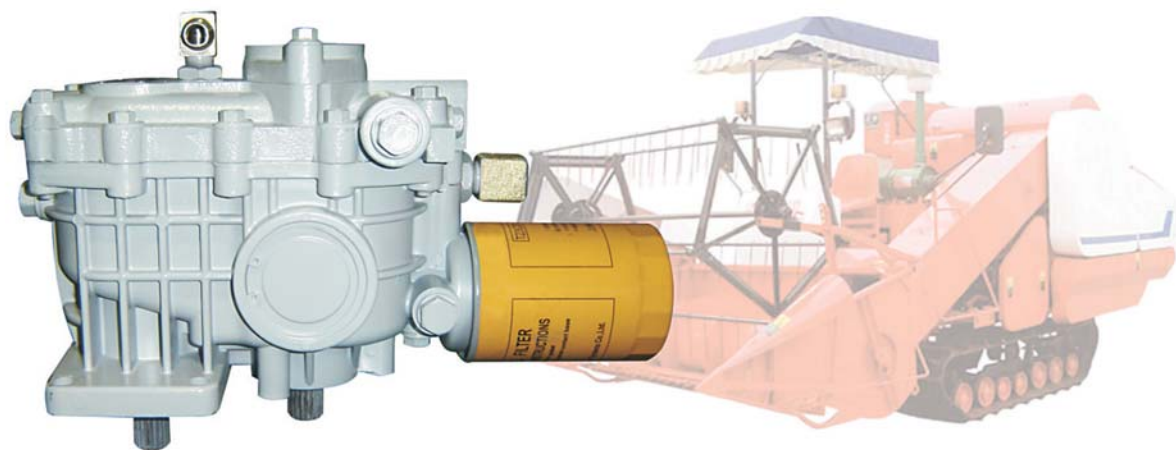
P-SHAFT (Input Shaft)

SPLINE SPEC	
Module	1.25
Number of Teeth	18
Pressure Angle	20°
P.C.D.	Ø22.5
Major DIA	Ø24.5 $_{-0.05}^{+0.10}$
Minor DIA	Ø21.70
Profile Shift	0.78
Span Measurement(3 Teeth)	10.137 $_{-0.06}^{+0.06}$



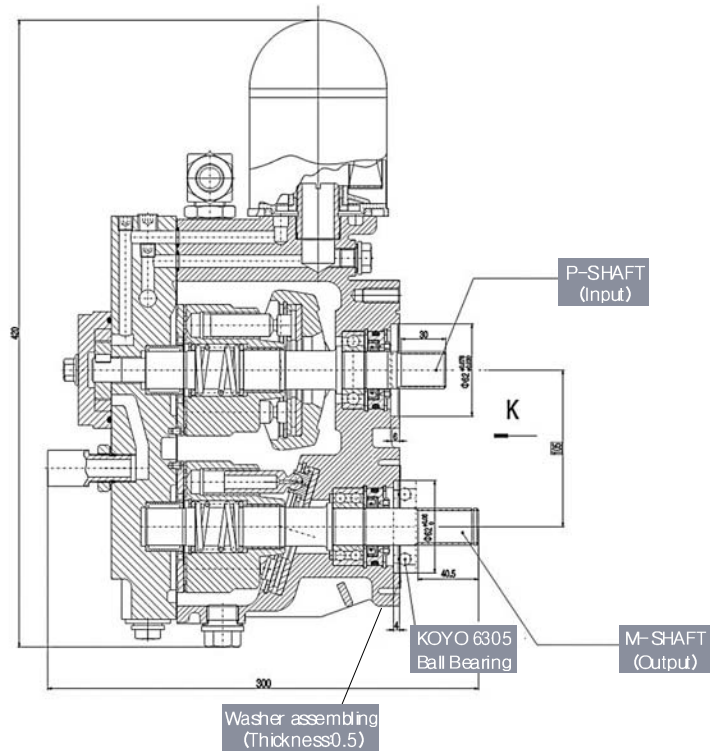
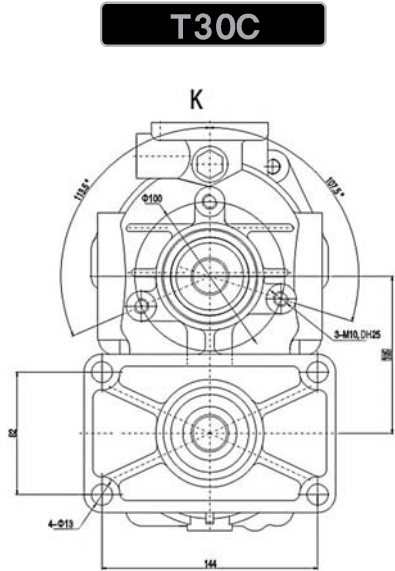
HST23C SPECIFICATION

MODEL		DHPVMF- 23 - L - 01		NO.			
COMPANY		"DAIHO HYDRAULIC KOREA"		TYPE AND USE		COMBINE · TRAVELING	
ITEM		SPECIFICATION		REMARKS			
BASIC SPEC.	DISPLACEMENT	PISTON PUMP		0 ~ 23.7 Cm ³ /rev		Power≤50HP APPLYING TO DIESEL ENGINE	
		PISTON MOTOR		23.7 Cm ³ /rev			
		CHARGE PUMP		6.2 Cm ³ /rev			
	PUMP LEVEL ANGLE		0~ ±0.30 rad (0~±17deg)				
	MOTOR LEVEL ANGLE		0.30 rad (17 deg)				
	CLOCKWISE or COUNTER CLOCKWISE FROM VIEW OF DIRECTION ROTATION						
	CHARGE CIRCUIT RELIEF SETTING PRESSURE 3000 min ⁻¹ (rpm)		0.49 ± 0.098 Mpa (5±1kgf/cm ²)		HYD.OIL VG46 STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)		
	PRESSURE IN CASE		LESS THAN 0.098Mpa (1kgf/cm ²)		Max 0.924 Mpa(3kgf/cm ²)		
	CHARGE PUMP SUCTION PRESSURE		LESS THAN-0.0196Mpa (-0.2kgf/cm ²)		LESS THAN 0.045Mpa(-0.461kgf/cm ²) AT LOW TEMPERATURE		
	FILTER		10μm		EQUIPPED IN CHARGE CIRCUIT		
STRAINER		150 mesh					
HYD.CONTAMINATION CLASSES		WITHIN NAS 9					
CUSTOMER SPEC.	INPUT SPEED		0~3000 min ⁻¹ (RPM)				
	PRE-SSURE	HIGH RELIEF SETTING PRESSURE		30.9MPa±0.49MPa at 20L/min		STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)	
		CRACKING PRESSURE		28.7MPa at 3L/min			
	HYD.OIL		ISO VG 46				
	HYD.OIL TEMPERATURE AT CASE DRAIN		+10°C ~ +90°C		-10°C ~ + 90°C / WITHIN 5 HOURS		
	PAINTING		PRIMARY PAINT		COLOR : BLUE		
	MAX.VIBRATION		LESS THAN 88.26 m/s ² (9G)				
INSTALLATION POSITION		COMBINE MISSION					
GENERAL SPEC.	EFFI-CIENCY	VOLUMETRIC EFE,		92.5%		BEST PERFORMANCE VG46, 50°C	
		OVER EFE,		73.5%			
	MAX.OUTPUT TORQUE		100N.m				
	OUTPUT ROTATION SPEED		-3000~3000 r/min				



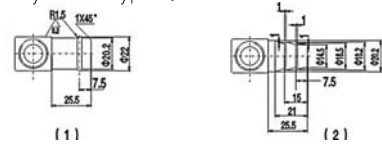
HST

Hydro-Static Transmission 44kW 120Nm



Except assembling measure of T30C attachment, Inlet & Outlet oil hose and electromotion shaft measure are as below.

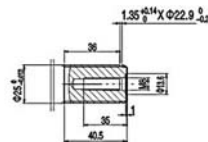
- There are two types of Inlet oil hose measure as below. Preferentially select type 1.



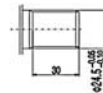
- There are two types of Outlet oil hose measure as below. Preferentially select type 1.



- Each spline specification of P-Shaft and M-Shaft is as following.

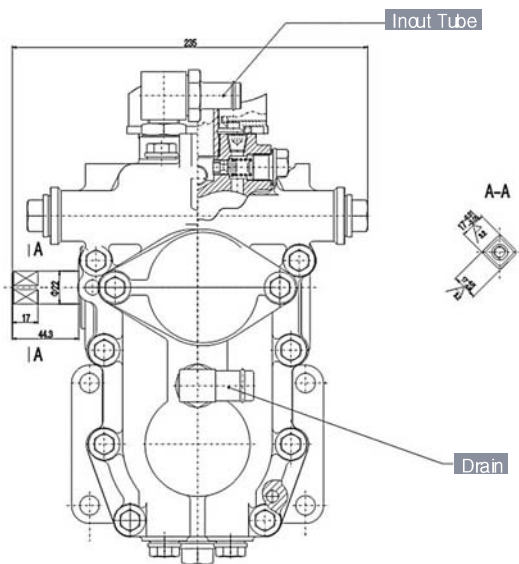


M-SHAFT (Output Shaft)



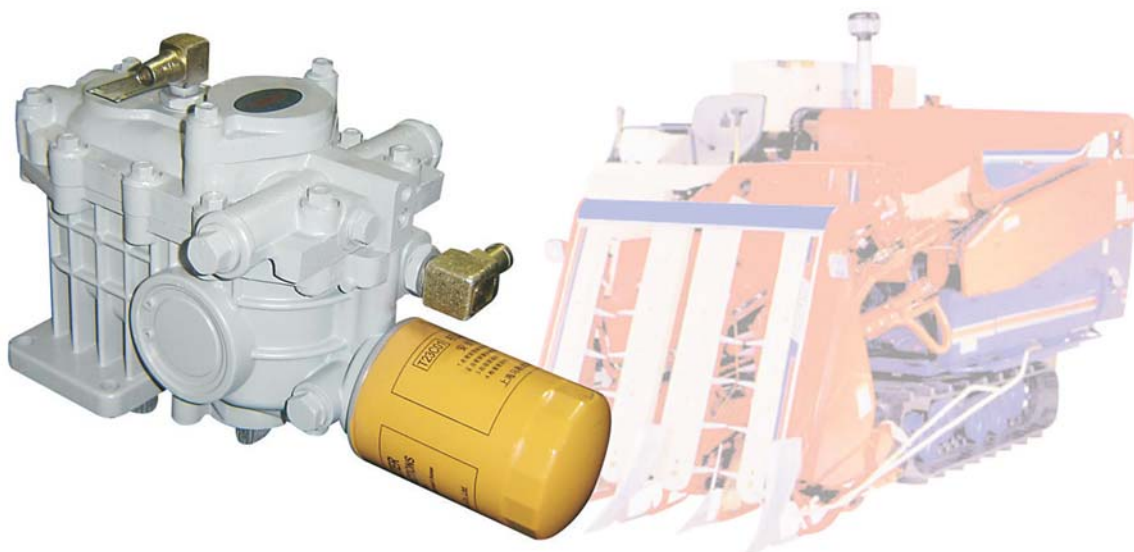
P-SHAFT (Input Shaft)

SPLINE SPEC	
Module	1.25
Number of Teeth	18
Pressure Angle	20°
P.C.D.	Ø22.5
Major DIA	Ø24.5 $_{-0.05}^{+0.10}$
Minor DIA	Ø21.70
Profile Shift	0.78
Span Measurement(3 Teeth)	10.137 $_{-0.06}^{+0.06}$



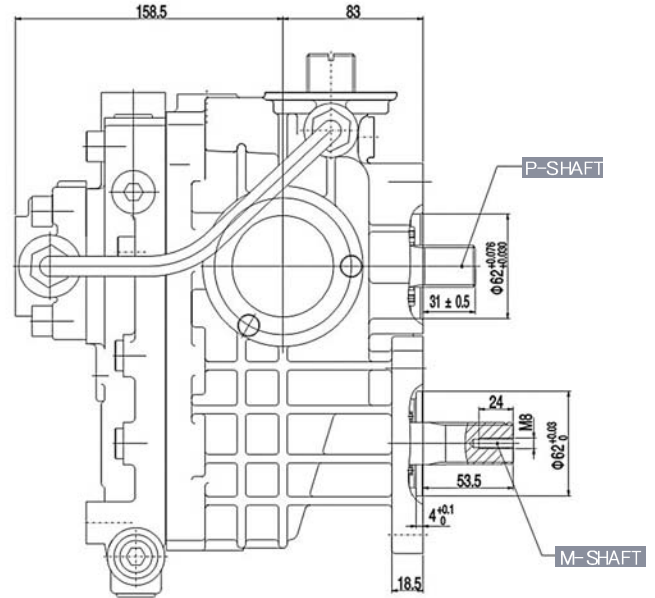
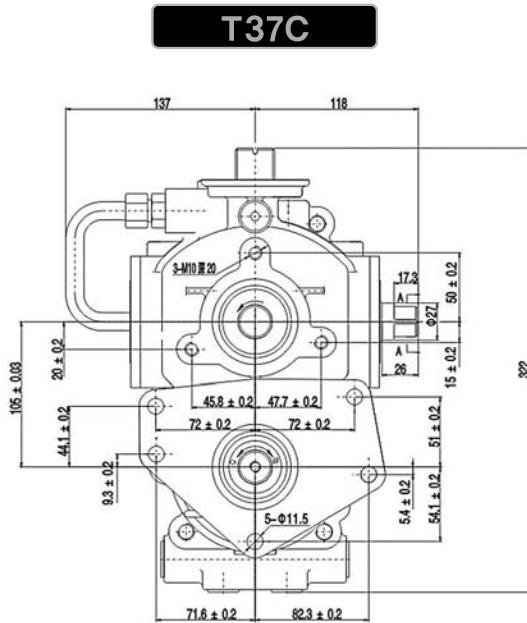
HST30C SPECIFICATION

MODEL	DHPVMF- 30 - L - 01		NO.		
COMPANY	"DAIHO HYDRAULIC KOREA"		TYPE AND USE	COMBINE · TRAVELING	
ITEM		SPECIFICATION		REMARKS	
BASIC SPEC.	DISPLACEMENT	PISTON PUMP	0 ~ 293 Cm ³ /rev	Power ≤60HP APPLYING TO DIESEL ENGINE	
		PISTON MOTOR	293 Cm ³ /rev		
		CHARGE PUMP	6,2 Cm ³ /rev		
	PUMP LEVEL ANGLE		0~ ±0,30 rad (0~±17deg)		
	MOTOR LEVEL ANGLE		0,30 rad (17 deg)		
	CLOCKWISE or COUNTER CLOCKWISE FROM VIEW OF DIRECTION ROTATION				
	CHARGE CIRCUIT RELIEF SETTING PRESSURE 3000 min ⁻¹ (rpm)		0,49 ± 0,098 Mpa (5±1kgf/cm ²)		HYD.OIL VG46 STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)
	PRESSURE IN CASE		LESS THAN 0,098Mpa (1kgf/cm ²)		Max 0,924 Mpa(3kgf/cm ²)
	CHARGE PUMP SUCTION PRESSURE		LESS THAN -0,0196Mpa (-0,2kgf/cm ²)		LESS THAN 0,048Mpa(-0,46kg/cm ²) AT LOW TEMPERATURE
	FILTER		10µm		EQUIPPED IN CHARGE CIRCUIT
STRAINER		150 mesh			
HYD.CONTAMINATION CLASSES		WITHIN NAS 9			
CUSTOMER SPEC.	INPUT SPEED		0~3000 min ⁻¹ (RPM)		
	PRE-SSURE	HIGH RELIEF SETTING PRESSURE	30,9MPa±0,49MPa at 20L/min		STANDARDIZATION AT 50 °C(HYD.OIL TEMPERATURE)
		CRACKING PRESSURE	28,7MPa at 3L/min		
	HYD.OIL		ISO VG 46		
	HYD.OIL TEMPERATURE AT CASE DRAIN		-10°C ~ +90°C		-10°C ~ + 90°C / WITHIN 5 HOURS
	PAINTING		PRIMARY PAINT		COLOR : BLUE
	MAX.VIBRATION		LESS THAN 88,26 m/s ² (9G)		
INSTALLATION POSITION		COMBINE MISSION			
GENERAL SPEC.	EFFI-CIENCY	VOLUMETRIC EFE	92,5%	at N = 3000 min ⁻¹ ΔP=14,7Mpa(150kgf/cm ²) θ = 0,30 rad (17deg)	BEST PERFORMANCE VG46, 50°C
		OVER EFE	72,8%		
MAX.OUTPUT TORQUE		120N.m			
OUTPUT ROTATION SPEED		-3000~3000 r/min			



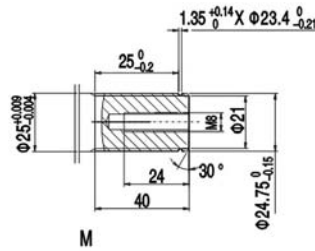
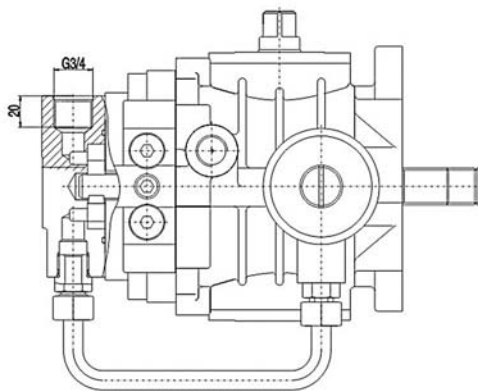


Hydro-Static Transmission 44kW 156Nm

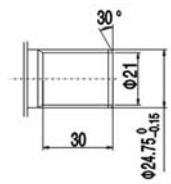


Except assembling measure of T37C attachment, Pump and Motor shaft measure are as below.

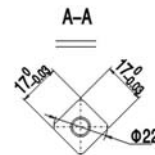
1. Each spine specification of P-Shaft and M-Shaft is as following.



M-SHAFT (Output)



P-SHAFT (Input)



TRUNION ARM

SPLINE SPEC	
Module	1,25
Number of Teeth	18
Pressure Angle	20°
P.C.D.	Ø22.5
Major DIA	Ø24.75 ⁰ _{-0.15}
Minor DIA	
Profile Shift	0,8
Span Measurement(3 Teeth)	10,225 ^{-0.052} _{-0.100}
Pin DIA.	Ø2,25
P.C.D.	27,183 ^{-0.113} _{-0.189}

HST37C SPECIFICATION

MODEL	DHPVMF-37-L-01		NO.		
COMPANY	"DAIHO HYDRAULIC KOREA"		TYPE AND USE	COMBINE · TRAVELING	
ITEM		SPECIFICATION		REMARKS	
BASIC SPEC.	DISPLACEMENT	PISTON PUMP	0 ~ 37 Cm ³ /rev		
		PISTON MOTOR	37 Cm ³ /rev		
		CHARGE PUMP	7,5 Cm ³ /rev		
	PUMP LEVEL ANGLE		0~ ±0,30 rad (0~±17deg)		Power ≤60HP APPLYING TO DIESEL ENGINE
	MOTOR LEVEL ANGLE		0,30 rad (17 deg)		
	CLOCKWISE or COUNTER CLOCKWISE FROM VIEW OF DIRECTION ROTATION				
	CHARGE CIRCUIT RELIEF SETTING PRESSURE 2600 min (rpm)		0,53 ± 0,098 Mpa (5±1kgf/cm ²)		HYD.OIL VG46 STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)
	PRESSURE IN CASE		LESS THAN 0,098Mpa (1kgf/cm ²)		Max 0,924 Mpa(3kgf/cm ²)
	CHARGE PUMP SUCTION PRESSURE		LESS THAN -0,0196Mpa (-0,2kgf/cm ²)		LESS THAN 0,045Mpa(-0,461kgf/cm ²) AT LOW TEMPERATURE
	FILTER		10μm		EQUIPPED IN CHARGE CIRCUIT
STRAINER		150 mesh			
HYD.CONTAMINATION CLASSES		WITHIN NAS 9			
COSSOME SPEC.	INPUT SPEED		0~3000 min ⁻¹ (RPM)		
	PRE-SSURE	HIGH RELIEF SETTING PRESSURE	24,5MPa±0,49MPa at 20L/min		STANDARDIZATION AT 50°C(HYD.OIL TEMPERATURE)
		CRACKING PRESSURE	22,9MPa at 3L/min		
	HYD.OIL		ISO VG 46		
	HYD.OIL TEMPERATURE AT CASE DRAIN		-10°C ~ +90°C		-10°C ~ +90°C / WITHIN 5 HOURS
	PAINTING		PRIMARY PAINT		COLOR : BLUE
	MAX.VIBRATION		LESS THAN 88,26 m/s ² (9G)		
INSTALLATION POSITION		COMBINE MISSION			
GENERAL SPEC.	EFFICIENCY	VOLUMETRIC EFE.	92,5%	at N = 3000 min ⁻¹ ΔP=14,7Mpa(150kgf/cm ²) θ = 0,30 rad (17deg)	BEST PERFORMANCE VG46, 50°C
		OVER EFE.	73,5%		
GENERAL SPEC.	MAX.OUTPUT TORQUE		156N.m		
	OUTPUT ROTATION SPEED		-3000~3000 r/min		

