ETP-HYLOC® Make-to-order product

ETP Transmission AB

Key processing is not required

Any trouble caused by keys such as a keyway processing can be resolved. Furthermore, the processing tolerance of the shaft · hub is general tolerance that special finish is not required.

Quick mounting and dismounting

Move the wedge of the taper piston by pressing the oil into the sleeve by the pump.
Mounting and dismounting can be quickly done.

Max. permissible torque [N·m]	2600～273000
Max. permissible thrust power [N]	70000～2485000
Bore diameter [mm]	ϕ50～220
Operating temp. limit [℃]	−40～+150
Backlash	Zero
Concentricity [mm]	0.02

Structure and Material

ETP-H

Plastic plug

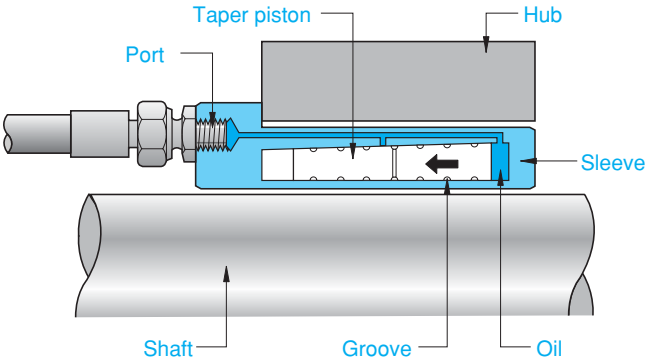
Body material:
equivalent of SMn420 thermal refining

Steel plug: equivalent of SCM435

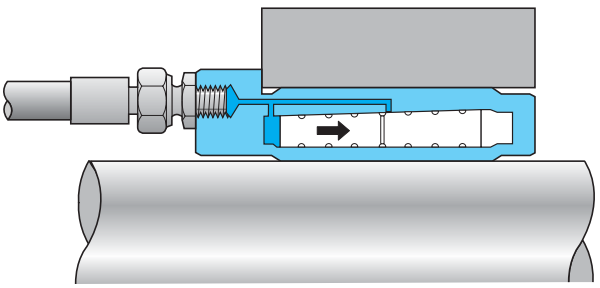
Principle of Operation

ETP-HYLOC

- The taper piston contained in the sleeve moves to the axial direction by the oil pressurization from the port. By the displacement of the taper piston, the shaft-side sleeve becomes reduced in size and the hub-side sleeve becomes enlarged, and the shaft and hub are fastened through the sleeve. The oil pressurization has an effect on the taper piston displacement only that no pressure is generated after the connection. The fastening power is retained only by the wedge effect of the taper piston.



■ When fastening
By moving the taper piston in the direction of an arrow by the oil pressure, the surface pressure is equally applied for the shaft and hub.



■ When releasing
By moving the taper piston in the direction of an arrow by the oil pressure, the shaft and hub are released.

ETP-H

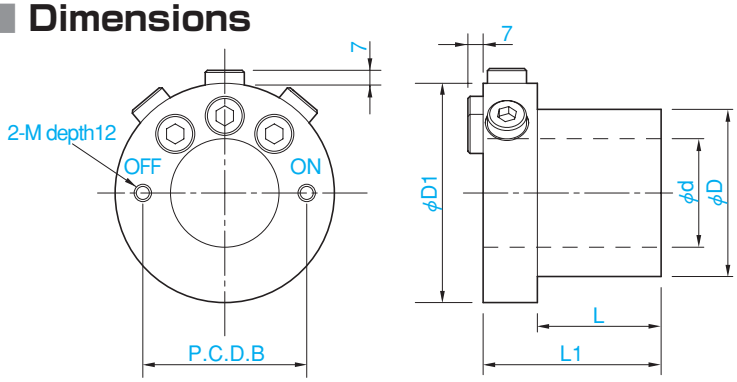
Single bolt tightening | Center ring | No axial direction displace-ment | Basic antirust | Stain less

Specification

Model	Maximum permissible torque [N・m]						Maximum permissible thrust power [N]						Moment of inertia [kg・m²]	Mass [kg]	Price
	Oil pressure 60MPa		Oil pressure 80MPa		Oil pressure 100MPa		Oil pressure 60MPa		Oil pressure 80MPa		Oil pressure 100MPa				
	Shaft tolerance h7	Shaft tolerance h8	Shaft tolerance h7	Shaft tolerance h8	Shaft tolerance h7	Shaft tolerance h8	Shaft tolerance h7	Shaft tolerance h8	Shaft tolerance h7	Shaft tolerance h8	Shaft tolerance h7	Shaft tolerance h8			
ETP-H-50	800	800	1600	1400	2600	2400	30000	30000	55000	55000	70000	70000	3.2×10^{-3}	2.4	—
ETP-H-60	1100	1100	3300	3000	4600	4300	60000	60000	100000	100000	130000	130000	5.4×10^{-3}	3.1	—
ETP-H-70	2400	2400	5800	5300	7900	7400	100000	95000	150000	150000	210000	200000	8.7×10^{-3}	4.1	—
ETP-H-80	5600	5300	9000	8400	12100	11500	150000	135000	220000	210000	290000	280000	14×10^{-3}	5.4	—
ETP-H-90	8300	7400	12700	11800	17100	16200	185000	165000	285000	265000	380000	360000	23×10^{-3}	7	—
ETP-H-100	12100	11000	18200	17100	24200	23100	245000	220000	365000	340000	485000	460000	34×10^{-3}	8.6	—
ETP-H-110	16800	15400	24800	23500	32900	31500	305000	280000	450000	430000	595000	570000	51×10^{-3}	11	—
ETP-H-120	22300	20600	32700	31100	43200	41600	370000	345000	545000	520000	720000	690000	76×10^{-3}	14	—
ETP-H-130	27200	24900	40500	38100	53800	51400	420000	385000	620000	590000	825000	790000	110×10^{-3}	17	—
ETP-H-140	35600	32900	52300	49600	68900	66200	510000	470000	750000	710000	985000	945000	150×10^{-3}	21	—
ETP-H-150	44500	41400	65000	61900	85400	82300	595000	550000	870000	825000	1135000	1095000	210×10^{-3}	25	—
ETP-H-160	54800	51200	79500	76000	104000	100000	685000	640000	995000	950000	1305000	1260000	290×10^{-3}	30	—
ETP-H-180	80000	75000	115000	110000	150000	146000	890000	835000	1280000	1220000	1675000	1625000	500×10^{-3}	42	—
ETP-H-200	109000	103000	157000	151000	206000	200000	1090000	1030000	1570000	1510000	2060000	2000000	830×10^{-3}	56	—
ETP-H-220	144000	137000	209000	201000	273000	266000	1310000	1245000	1900000	1830000	2485000	2415000	1300×10^{-3}	73	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

ETP - H - □

Size

Unit [mm]

Model	d	D	D1	L	L1	P.C.D.B	M	CAD file No.
ETP-H-50	50	77	101	57	82	75	M8	ETP-H01
ETP-H-60	60	89	113	65	90	86	M8	ETP-H02
ETP-H-70	70	102	122	75	100	96	M8	ETP-H03
ETP-H-80	80	115	135	85	110	107	M8	ETP-H04
ETP-H-90	90	128	148	95	120	124	M12	ETP-H05
ETP-H-100	100	140	160	105	130	140	M12	ETP-H06
ETP-H-110	110	154	173	115	140	150	M12	ETP-H07
ETP-H-120	120	168	186	125	150	160	M12	ETP-H08
ETP-H-130	130	182	200	135	160	175	M16	ETP-H09
ETP-H-140	140	196	213	145	170	185	M16	ETP-H10
ETP-H-150	150	210	227	155	180	195	M16	ETP-H11
ETP-H-160	160	224	240	165	190	205	M16	ETP-H12
ETP-H-180	180	252	267	185	210	223	M16	ETP-H13
ETP-H-200	200	280	293	205	230	247	M16	ETP-H14
ETP-H-220	220	308	320	225	250	280	M16	ETP-H15

* Port (Radial・thrust hose fastening) is G1/8.

Points to be checked in design

Mating shaft tolerance, mating hub tolerance and surface roughness

Model	Mating shaft tolerance	Mating hub tolerance	Surface roughness
ETP-H	h7 or h8	H7	25S (Ave. roughness of center line 6.3a) or less

* Note that maximum permissible torque and maximum permissible thrust vary depending on the mating shaft tolerance.

Operating temperature limit

Model	Mounting/dismounting [times]
ETP-H	−40～+150

The No. of mounting and dismounting

Model	Mounting/dismounting [times]
ETP-H	2000

Concentricity and balance

Model	Cencentricity [mm]	Balance [gmm/kg]
ETP-H	0.02	75

* Model with a steel plug in a radial direction: If the size is under 100, its unbalanced weight increases.

Torque • Thrust power coefficient

When torque and thrust power are simultaneously applied to the ETP-HYLOC, their maximum permissible values are both reduced. The value can be evaluated by the coefficient of the cart below.

Calculation Example:
ETP-H-100 is used at 20℃ in temperature.

The maximum permissible torque T and thrust power F at 20℃ are;
T= 24200 [N·m] , F=484000 [N]
The maximum permissible torque Tmax when the thrust power is maximally (Fmax=290000 [N]) applied can be evaluated by the formula below.

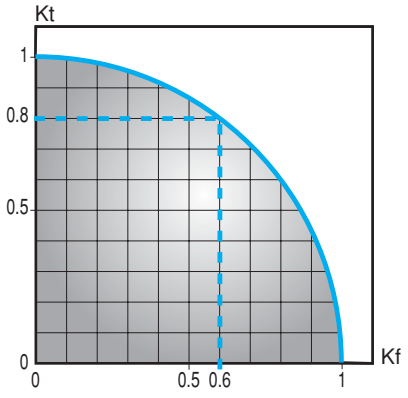
Thrust factor Kf
=Fmax/F
=290000/484000=0.6

The torque coefficient Kt when Kf = 0.6 is approximately 0.8 by the chart below.
It is, therefore, the maximum permissible torque Tmax in this case is;

Tmax=T×Kt=24200×0.8=19360 [N·m]

Relation between Kt and Kf can be evaluated by the formula below.

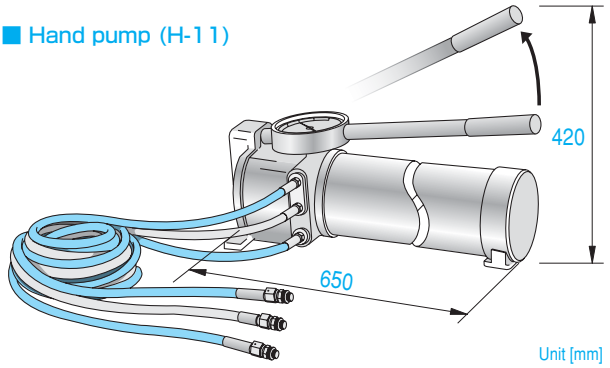
$$\sqrt{(Kt)^2+(Kf)^2}=1$$



Recommended oil pressure pump

For mounting and dismounting of the ETP-HYLOC, a pump with available supplies of maximally about 150MPa of pressure and a hose that is capable to withstand the pressure are required. We prepare a hand pump (H-11) (make-to-order product) that meets the above requirements. As an accessory of the hand pump, a 3m length of hose is attached that direct mounting is possible. If mounting and dismounting may be repeatedly performed, there is a quick connection (Type02) for easy disconnection.

Hand pump (H-11)

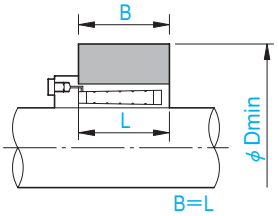


Unit [mm]

Quick connection (Type02)

A list of the minimum outside diameter for a hub

A hub may be deformed if the stress value applied to it is high. Refer to the list below to find the appropriate outside diameter.



ϕ Dmin Unit [mm]

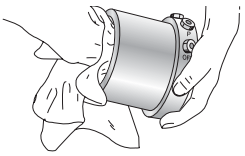
Model	Yield point stress of the material [N/mm²]						
	Oil pressure 60MPa			Oil pressure 60MPa		Oil pressure 100MPa	
	>200	>300	>400	>300	>400	>300	>400
ETP-H-50	90	90	90	95	90	110	105
ETP-H-60	115	105	95	120	110	140	125
ETP-H-70	135	120	110	140	125	170	145
ETP-H-80	155	140	130	165	140	200	160
ETP-H-90	180	160	145	185	160	235	180
ETP-H-100	200	170	160	210	180	270	200
ETP-H-110	220	195	180	235	195	295	220
ETP-H-120	240	215	195	255	215	320	240
ETP-H-130	260	230	210	275	230	350	260
ETP-H-140	285	250	225	295	250	375	280
ETP-H-150	300	265	240	315	265	400	300
ETP-H-160	320	285	260	335	285	425	320
ETP-H-180	360	320	290	375	320	480	360
ETP-H-200	400	355	320	420	355	535	400
ETP-H-220	440	390	355	460	390	585	435

Mounting and Dismounting

Mounting the ETP-HYLOC

1 Cleaning the shaft and hub

Wipe off the rust, dust and oil content sit on the surface of the shaft and hub with an alcohols solvent. If any grease is attached, remove the grease completely. Meanwhile, the oil content attached on the surface of the ETP-HYLOC should be also removed.

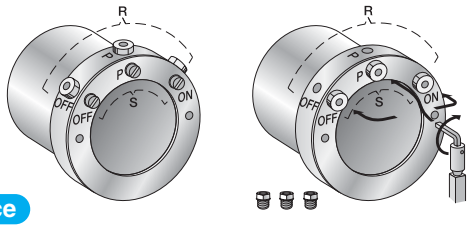


Notice

Do not use the molybdenum-containing oil. It effects a change in the coefficient of friction.

2 Mounting on the shaft and hub

There are three plastic plugs assembled in the thrust direction (S) of the ETP-HYLOC before shipping. If they are used in the radial direction, dismount the three steel plugs and mount them in the thrust port.
(The dihedral width of the steel plug is 5mm.)

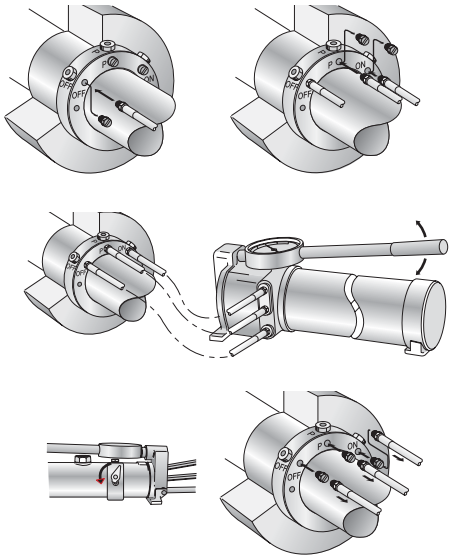


Notice

Do not apply any pressure until the ETP-HYLOC is completely set to the shaft and hub.

3 Connecting the pressure pump

Dismount the plastic plug from the [OFF] port and connect the return hose of the pump (black).
Dismount the plastic plugs from the [ON] and [P] ports. And then connects the pressure hoses of the pump (blue).



4 Applying pressure on the ETP-HYLOC

Before applying any pressure, confirm if there is a steel plug placed in the unused port. When it becomes its specified pressure, keep the condition for 5 to 10 seconds. The specified pressure is 100Mpa.

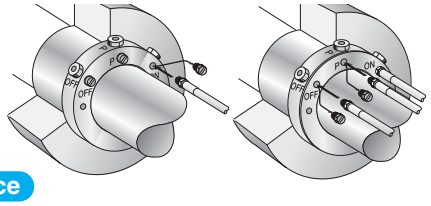
5 Disconnecting the hose

The pressure in the pump is released by opening the valve. Disconnect the hose from the ETP-HYLOC. Place the plastic plug as a barrier for dirt and dust.

Dismounting the ETP-HYLOC

1 Connecting the pressure pump

Dismount the plastic plug from the [ON] port and connect the return hose of the pump (black).
Dismount the plastic plugs from the [OFF] and [P] ports. And then connect the pressure hoses of the pump (blue).

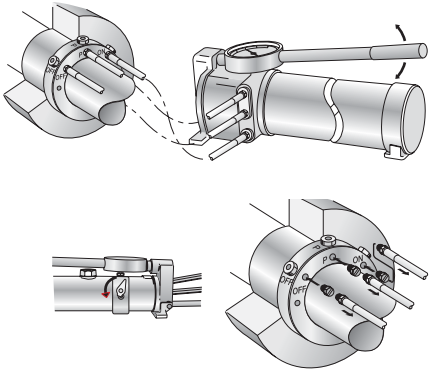


Notice

If the return hose is not connected to the [ON] port, the inside oil may blow out.

2 Applying pressure on the ETP-HYLOC

Before applying any pressure, confirm if there is a steel plug placed in the unused port. When it becomes its specified pressure, keep the condition for 10 seconds. (Check the pressure gauge indication.) When the taper piston moves, the pressure starts to decline. Apply a little pressure by the pump until the pressure goes up again. At that point, the ETP-HYLOC should be completely released. The permissible pressure for disconnecting is 120Mpa.



3 Disconnecting the hose

The pressure in the pump is released by opening the valve. Disconnect the hose from the ETP-HYLOC. Place the plastic plug as a barrier for dirt and dust.