



S. A. M-Tech

Ship Accessories & Marine Technology



ISO 9001 : 2015



CERTIFICATE
OF EUROPE



KOREA SHIP SAFETY
TECHNOLOGY AUTHORITY



ABYC MEMBER



KOREAN REGISTER



RUSSIAN MARITIME REGISTER
OF SHIPPING



시장을 리더하는 S.A. M-Tech Co., Ltd.

브랜드의 광고를 오직 제품으로 말하는 기업

주식회사 에스에이엠텍은 1981년 설립된 이래 해양장비 및 선박 액세서리 제품의 제조와 유통에 오랜 역사를 가지고 있습니다.

모든 제품은 철저한 품질 관리 및 오랜 기간의 R&D를 통해 최고 수준의 품질을 자랑하며, 주요 부분은 염분 및 오염으로부터 부식을 예방하는 재질을 사용하여 긴 수명을 보장합니다. **주식회사 에스에이엠텍**이 제조 및 공급하는 주요제품들은 세계의 많은 해양관련 장비제조 업체 및 사용자들에게 항상 새로운 만족감을 느끼게 합니다.

주식회사 에스에이엠텍은

“품질은 최고로, 고객은 제일로” 라는 슬로건을 통해 항상 고객들에게 최고의 품질과 합리적인 가격으로 제품을 공급하고 있습니다.

We Let the Quality of Our Product Speak for Itself.

Since our establishment in 1981, **S.A. M-Tech Co., Ltd.** has been advancing forward to become a world's renowned manufacturer and distributor in Ship Accessories and Marine Equipments.

Through long-term Research & Development and strict quality management, our products boast highest level of quality. Furthermore, our products secure high durability as the material inputs are corrosion-free from salinity and pollution. All of our products are qualified for International Standard and has been earning great reputation among many buyers across the globe.

Under our slogan

“The Best Quality and the Best Service for the Customer”

S.A. M-Tech Co.,Ltd. strives its best to satisfy customers with our top quality products with most reasonable price.

회사연혁

Company History

- 세두기계 설립 1981. 08. Sedu Machinery was Established
- 에스에이 기계 상호변경 및 확장이전 1993. 10. Company name changed to S.A Machinery and moved to a larger facility in Seoul
(서울 구로구 신도림동 276-59호)
- 컨트롤 레버 SB-TYPE 개발 1994. 01. Developed & Commercialized SB-Type Control Lever
- 수동 유압조타기 개발 1994. 08. Developed & Commercialized Manual Hydraulic Steering System
(K.F 승인) (K.F. Approved)
- 컨트롤 레버 ST-TYPE 개발 1995. 01. Developed & Commercialized ST-Type Control Lever
- 기동 유압 조타기 개발 (K.F 승인) 1996. 02. Developed & Commercialized Power Hydraulic Steering System
(K.F Approved)
- 에스에이마트 상호 변경 1996. 09. Company name changed to S.A. Mart.
- 유압 헬름펌프 개발 1996. 12. Developed & Commercialized Hydraulic Helm Pump
- 유압 조타기 러시아 선급 협회 승인 1998. 01. Approval of classification on Hydraulic Steering System by Russian Maritime Register of Shipping
- 워터젯 한국 독점 판매권 계약 1998. 02. Exclusive Sales Contract Signed with Water Jet
(North American Marine Jet) (North American Marine Jet)
- ABYC (미국보트요트협회) 정식 회원 등록 1998. 06. Registered as Official Member of American Boat and Yacht Council (ABYC)
- 확장이전 (인천 남동공단) 1998. 12. Moved to a larger facility in Incheon
- 엔진 컨트롤 케이블 개발 1999. 04. Developed & Commercialized Engine Control Cable
- 실린더 CE 마크 획득 (EC00/00003) 2000. 01. Acquired CE Mark for Cylinder (EC00/00003)
- 오토 파일럿 개발 2000. 03. Developed & Commercialized Auto Pilot
- 엔진 리모트 시스템 개발 2000. 05. Developed & Commercialized Engine Remote System
- 헬름펌프 CE 마크 획득 2000. 06. Acquired CE Mark for Helm Pump
(BS EN ISO 10592-1995) (BS EN ISO 10592-1995)
- 선박용 자동 조타장치 실용신안등록 2001. 07. Registered a Utility Model Right : Autopilot Steering System for Marine-use
- 주식회사 에스에이마트로 법인전환 2002. 01. Converted to a Corporation (S. A. Mart Co., Ltd.)
- ISO 9001:2009 인증획득 2002. 11. Acquired ISO Certification (9001:2009)
- 스카이 인라인 스텐 드라이브 개발 2003. 09. Developed & Commercialized Sky In-Line Surface Stern Drive
- 선미추진장치 실용신안등록 2005. 03. Registered a Utility Model Right : Sky In-Line Surface Stern Drive
(스카이 인-라인 스텐드라이브)
- 아웃보드 실린더 개발 및 상용화 2006. 05. Developed & Commercialized Outboard Cylinder
- 주식회사 에스에이엠텍으로 상호변경 2010. 07. Company name changed to S.A. M-Tech Co., Ltd.
- 멀티 코어 케이블 개발 (SA-C33M) 2013. 11. Developed & Commercialized SA-C33 Multi-core Engine Control Cable
- 수출 유망 중소기업 선정 - 중소기업청 2014. 06. Appointed as a "Promising Export Firm" by Small & Medium Business Administration
- 선박용 조타 장치 (전기스탠드) 특허등록 2015. 04. Registered a Patent Right : Marine Steering System (Electric-Type Stand)
- 기업부설연구소 설립 2016. 01. Establishment R & D Center

목 차 | Page Contents |

회사소개 및 연혁 2~3 Introduction & History		
디자인 시트 및 시스템 배관도 6~11 Design Sheet & System Diagram		
유압 조타 디자인 시트	6	Hydraulic Steering Gear Design Sheet
타 토크 계산식	7	Rudder Torque Calculator
수동 유압 조타 시스템	8	Manual Hydraulic Steering System
기동 유압 조타 시스템 (오일펌프 엔진구동)	9	Power Hydraulic Steering System (Oil Pump Engine Driving)
기동 유압 조타 시스템 (파워 팩 구동)	10	Power Hydraulic Steering System (Power Pack)
전기식 기동 유압 조타 시스템 (솔레노이드 콘트롤)	11	Electric Power Hydraulic steering System (Solenoid Control)
스티어링 실린더 13~20 Steering Cylinder		
실린더 & 틸러	14	Cylinders & Tiller
실린더 (사양)	15	Cylinders (Specifications)
실린더 치수 (다이렉트 실린더)	16	Dimension of Cylinder (Direct Cylinder)
실린더 치수 (일자형 & 로타리 & 더블 실린더)	17	Dimension of Cylinder (Direct, Rotary, Double Cylinder)
실린더 치수 (더블 실린더)	18	Dimension of Cylinder (Double Cylinder)
실린더 치수 (트윈 러더용 일자형 & 더블 실린더)	19	Dimension of Cylinder (For Twin Rudder – Direct & Double Cylinder)
악세서리	20	Accessorie
수동 조타 시스템 21~30 Manual Steering System		
헬름펌프	22~24	Helm Pump
헬름펌프 선택	24	Select (Helm Pump)
수동 스탠드	25	Manual Stand
악세서리 (휠, 러더앵글센서, 기타)	26	Accessorie (Wheel, R.A. Sensor, Other)
악세서리 (게이지)	27	Accessorie (R.A. Indicator)
헬름펌프 with 리모트 장치	28	Helm Pump with Remote Device
수동 리모트 장치 with 오토파일럿	29	Manual Remote Device with Autopilot
악세서리	30	Accessories (Valve)
기동 조타 시스템 31~41 Power Steering System		
스티어링 유닛	32	Steering Unit
스티어링 유닛 선택	33	Select (Steering Unit)
기동 스탠드	34	Power Stand
오일펌프 & 오일탱크	35	Oil Pump (Engine Driving) & Oil Tank
오일펌프 & 파워 팩	36	Oil Pump (Motor Driving) & Power Pack
컨트롤 판넬	37	Electric Control Panel
기동 리모트 장치 – 리모트 솔레노이드 밸브 & 블록	38	Power Remote Device – Remote Solenoid & Block (Joystick & Dial))
엔진 리모트 시스템 (TCB-100, DS-100)	39	Engine Remote Control System (TCB-100, DS-100)
오토파일럿	40	Autopilot
악세서리 (밸브)	41	Accessory (Valve)

목 차 II Page Contents II

전기식 조타 시스템 43~57 Electric Steering System	
팔로우-업 조그 레버 조타 (휠 하우스용) 44	Follow-up Jog Lever Steering (For Wheel House)
전기식 헬름 유닛 조타 (휠 하우스용) 45	Electric Helm Unit Steering (For Wheel House)
전기식 스탠드 (휠 하우스용) 46	Electric Stand (For Wheel House)
ES-02-1R / ES-02-3R	ES-02-1R / ES-02-3R
전기식 스탠드 (휠 하우스용) 47	Electric Stand (For Wheel House)
ES-02-1R-AP / ES-02-3R-AP	ES-02-1R-AP / ES-02-3R-AP
전기식 스탠드 (휠 하우스용) ES-03M 48	Electric Stand (For Wheel House) ES-03M
전기식 스탠드 (휠 하우스용) ES-03-AP 49	Electric Stand (For Wheel House) ES-03M-AP
전기식 스탠드 (휠 하우스용) ES-03B 50	Electric Stand (For Wheel House) ES-03B
전기식 스탠드 (휠 하우스용) ES-03B-AP 51	Electric Stand (For Wheel House) ES-03B-AP
전기식 스탠드 (휠 하우스용) EAP-01 52	Electric Stand (For Wheel House) EAP-01
전기식 스탠드 (휠 하우스용) AG-1000 53	Electric Stand (For Wheel House) AG-1000
전기식 스탠드 (휠 하우스용) ASP-1000 54	Electric Stand (For Wheel House) ASP-1000
전기식 스탠드 (휠 하우스용) ASP-2000 55	Electric Stand (For Wheel House) ASP-2000
컨트롤 박스 56	Control Box
MCB-D01/MCB-A01/SFRB-01/COPS-24/ASRB-02W	MCB-D01/MCB-A01/SFRb-01/COPS-24/ASRB-02
컨트롤 유닛 57	Control Unit
MT-V15, MT-V40, DR-100A, DR-300D	MT-V15, MT-V40, DR-100A, DR-300D





Hydraulic Steering Gear Design Sheet

고객님의 배에 요구되는 조타시스템의 적절한 사양을 위하여 다음을 정확히 기입해 주시기 바랍니다. To properly size the steering system required for your vessel please fill out the following accurately.

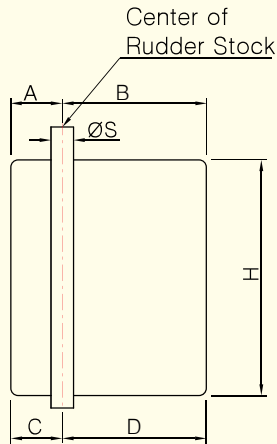
A. 고객자료 (Client Data)

Date : 20 . . .

고객명 (Client)			
전화 (Tel)	팩스 (Fax)	이메일 (E-mail)	

B. 선박재원 (Technical Data Sheet)

선명 (Vessel Name)			
선형 (Hull Type)	(1. Mono Hull 2. Catamaran 3. Trimaran)		
배크기 (Vessel Length)	Length	m × Beam	m × Depth
최대속도 (Max. Speed)			Knot
전타속도 (Rudder Turning Velocity) (70°)			Sec
러더 수량 (Number of Rudder)			EA
러더 각도 (Design of Rudder Angle)			deg



· Fill out the below form

No	Unit	<input type="checkbox"/> mm	<input type="checkbox"/> inches	Remark
A				
B				
C				
D				
H				
Ø S				

C. 휠 하우스 (Wheel House Operating)

Check

- 수동 (Manual) (Helm Pump)
- 조이스틱 (Joystick) NFU
- 기동 조타 (Power Steering) (Steering Unit Auto-Pilot Remote Steering)
- 전기식 조타 (Electronic Steering) (Follow-up Auto-Pilot Gyro)

D. 솔레노이드 밸브 (Solenoid Valve) :

Yes No

E. 오일펌프 구동 (Oil Pump Driving)

Check

- 메인엔진 (Main Engine) (V Pulley)
- 파워팩 (Power Pack) (Motor _____ HP / kW) (Single Twin Double Power Pack)

F. 비상조타 (Emergency Steering) :

Yes No

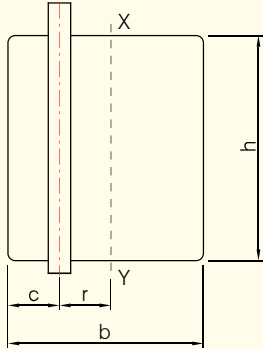
G. 선급 Class :

KST KR RS Others ()

H. 기타 (Other requirments)



Rudder Torque Calculation



$$T \text{ (Torque)} = F_R \times r \text{ (N-m)}$$

$$= F_R \times r \times 0.10197 \div 1000 \text{ (Ton-m)}$$

$$F_R = 132 K_1 K_2 K_3 A V^2 \text{ (N)}$$

A : 타의 면적 (m²) (b×h)

V : 선박의 속력 (kt), V가 10kt 미만인 경우 다음 식에 의한 V_{min} 으로 한다.

$$V_{min} = \frac{V + 20}{3}$$

K₁ : 타의 종횡비 (aspect ratio) Λ 에 의하여 결정되는 계수

$$K_1 = \frac{\Lambda + 2}{3}$$

Λ : 다음 식에 따른다. 다만, 2보다 클 필요는 없다.

$$\Lambda = \frac{h^2}{A}$$

h² : 타의 평균높이
A : 타의 면적

K₂ : 타의 단면형상에 의한 계수 (괴팅겐형 전진상태 1.1)

K₃ : 타의 설치위치에 의하여 결정되는 계수 (프로펠러 후류 밖에 타가 있는 경우 0.8)

r : 타에 작용하는 타력의 중심으로부터 타두재 중심선까지의 수평거리(m)

$$r = b (a-e) \text{ (m)}$$

전진시에 있어서 r 은 다음 식에 의한 r_{min} 이상이어야 한다.

$$r_{min} = 0.1b \text{ (m)}$$

b : 타의 평균너비 (m)

a : 계수로서 타의 진행방향 전진상태 a = 0.33

e : 타의 평형계수

$$e = \frac{A_f}{A}$$

A_f : 타두재의 중심선 앞쪽에 위치한 타의 면적 (m²) (c×h)
A : 타의 면적 (m²) (b×h)

$$F_R = 132 K_1 K_2 K_3 A V^2 \text{ (N)}$$

A : Area of rudder plate (m²)

V : Speed of Ship (Kt), When the speed is less than 10 knots, V is to be replaced by V_{min} obtained from the following formula :

$$V_{min} = \frac{V + 20}{3}$$

K₁ : Factor depending on the aspect ratio Λ of the rudder area

$$K_1 = \frac{\Lambda + 2}{3}$$

Λ : As obtained from the following formula. However, Λ is not required to be greater than 2.

$$\Lambda = \frac{h^2}{A}$$

h² : mean height of rudder (m)
A : Area of rudder plate (m²)

K₂ : Factor depending on the rudder profile (Göttingen profiles Ahead condition 1.1)

K₃ : Factor depending on the location of rudder (for rudders outside the propeller jet 0.8)

r : distance from the center of rudder force on the rudder to the centerline of the rudder stock, determined by the following formula.

$$r = b (a-e) \text{ (m)}$$

For the ahead condition, however, r_{min} is not to be less than r_{min} obtained from the following formula.

$$r_{min} = 0.1b \text{ (m)}$$

b : Mean breadth(m) of rudder determined

a : Course of rudder Ahead condition a = 0.33

e : balance factor of the rudder

$$e = \frac{A_f}{A}$$

A_f : portion of the rudder plate area situated ahead of the centerline of the rudder stock (m²) (c×h)
A : Area of rudder plate (m²) (b×h)



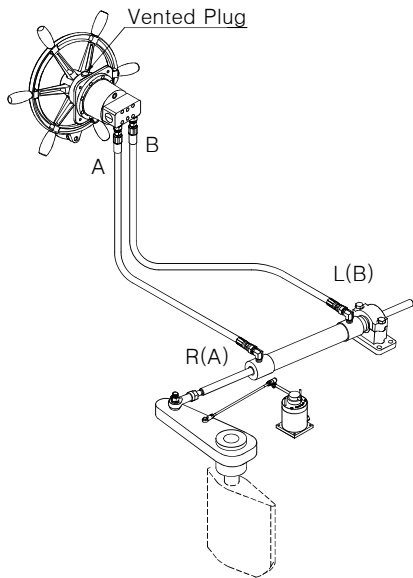
Manual Hydraulic Steering System

Manual (Helm Pump) Steering System (수동)

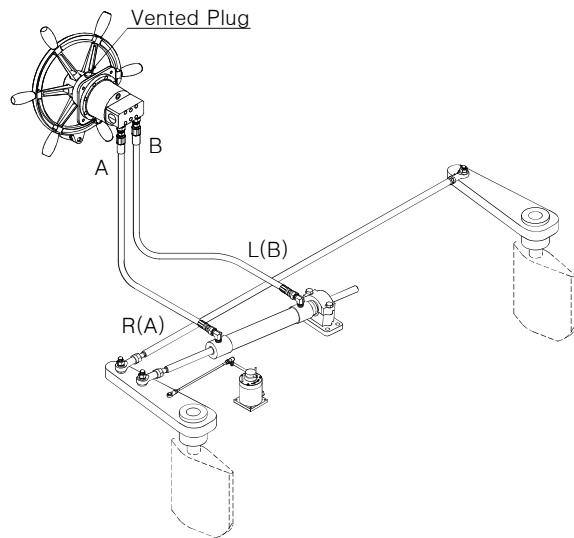
1. Wheel House : Helm Pump

Single Station

Single (1) – Rudder



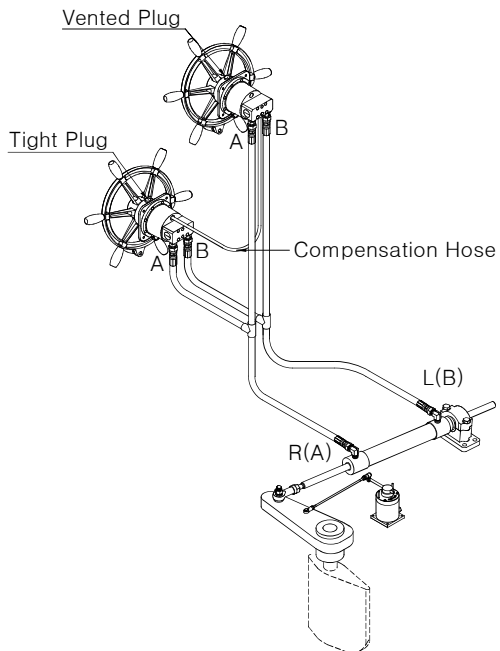
Twin (2) – Rudder



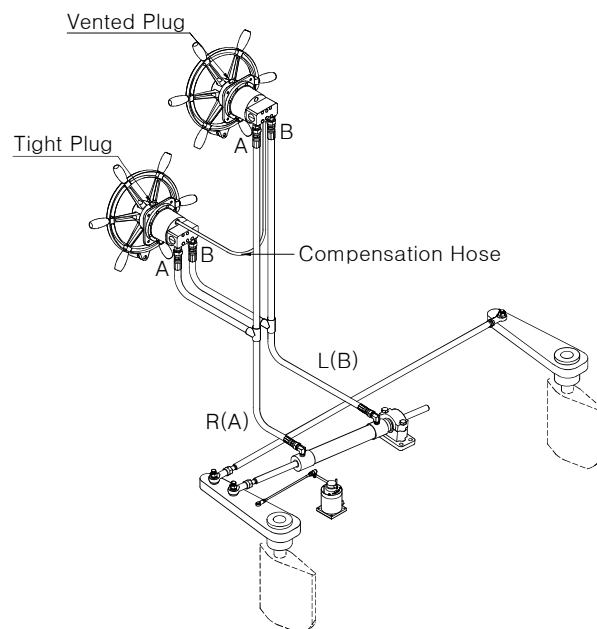
8

Dual Station

Single (1) – Rudder



Twin (2) – Rudder



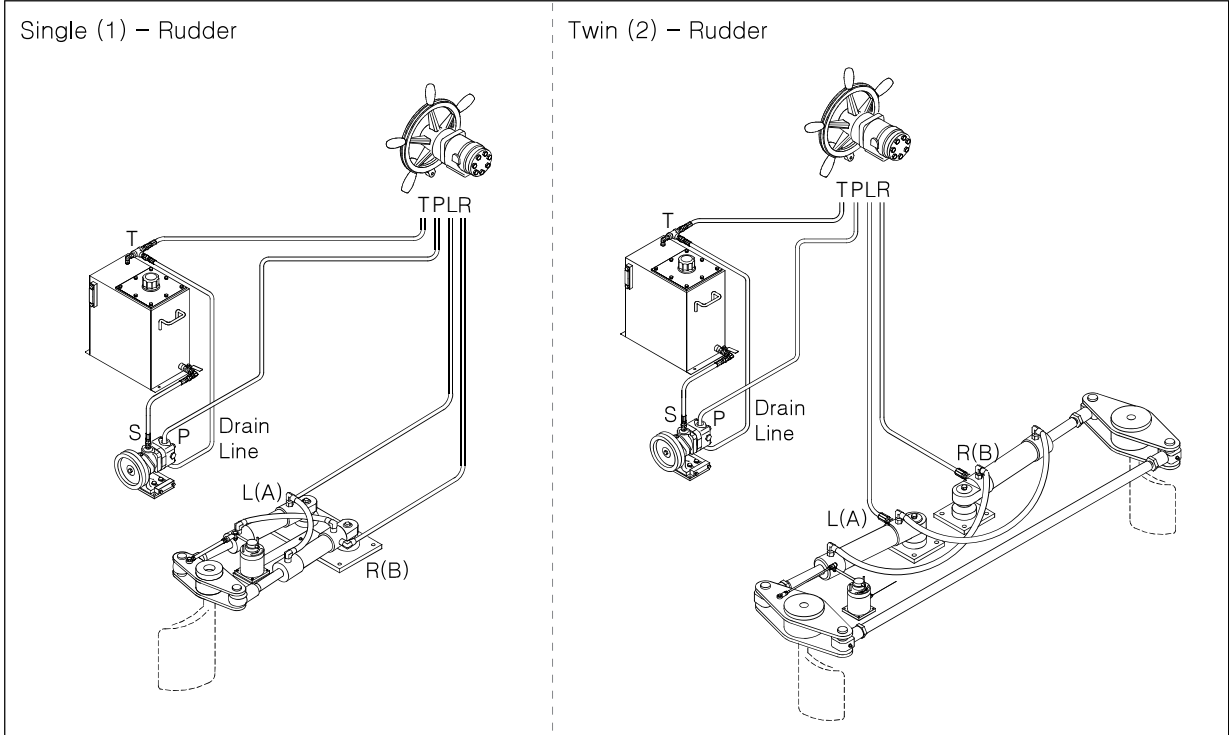


Power Hydraulic Steering System (Oil Pump Engine Driving)

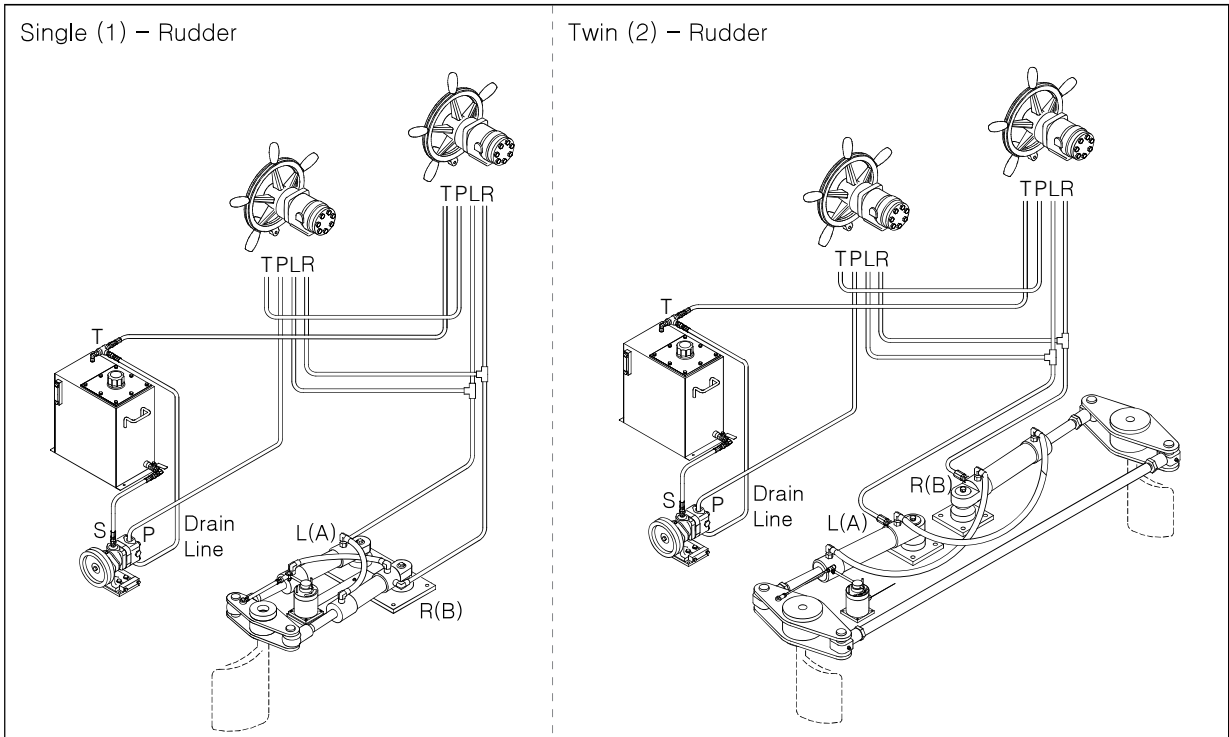
Power (Steering Unit) Steering System (기동)

- 1. Wheel House : Steering Unit
- 2. Oil Pump : Engine Driving

Single Station



Dual Station





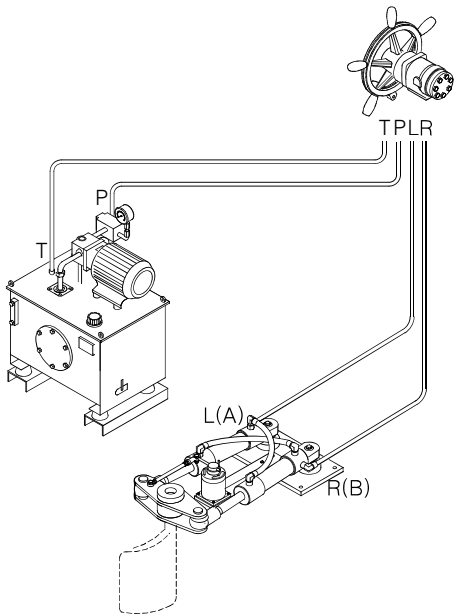
Power Hydraulic Steering System (Power Pack)

Power (Steering Unit) Steering System (기동)

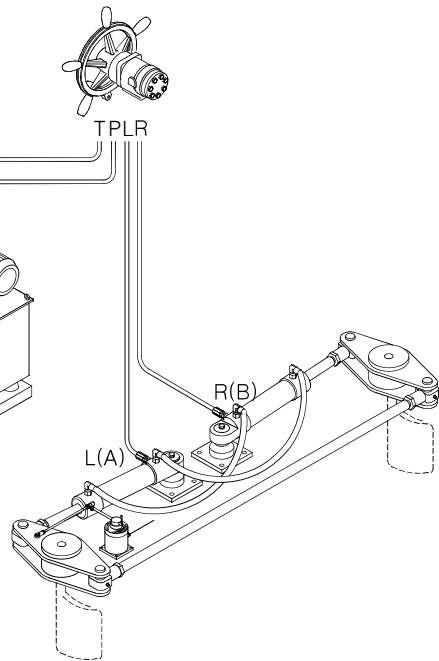
- 1. Wheel House : Steering Unit
- 2. Power Pack : ① Single Power Pack
② Twin Power Pack (Option)

Single Station

Single (1) – Rudder



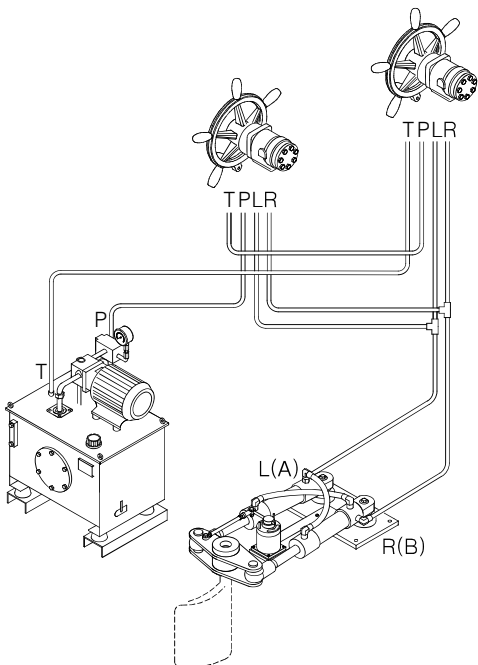
Twin (2) – Rudder



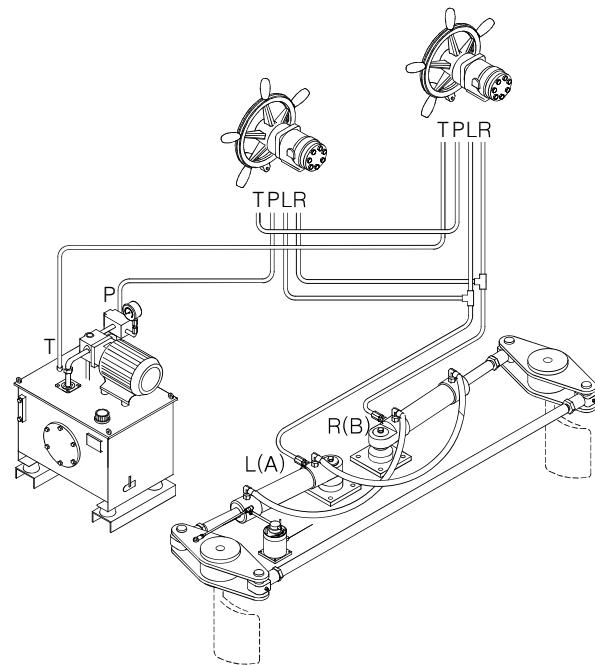
10

Dual Station

Single (1) – Rudder



Twin (2) – Rudder



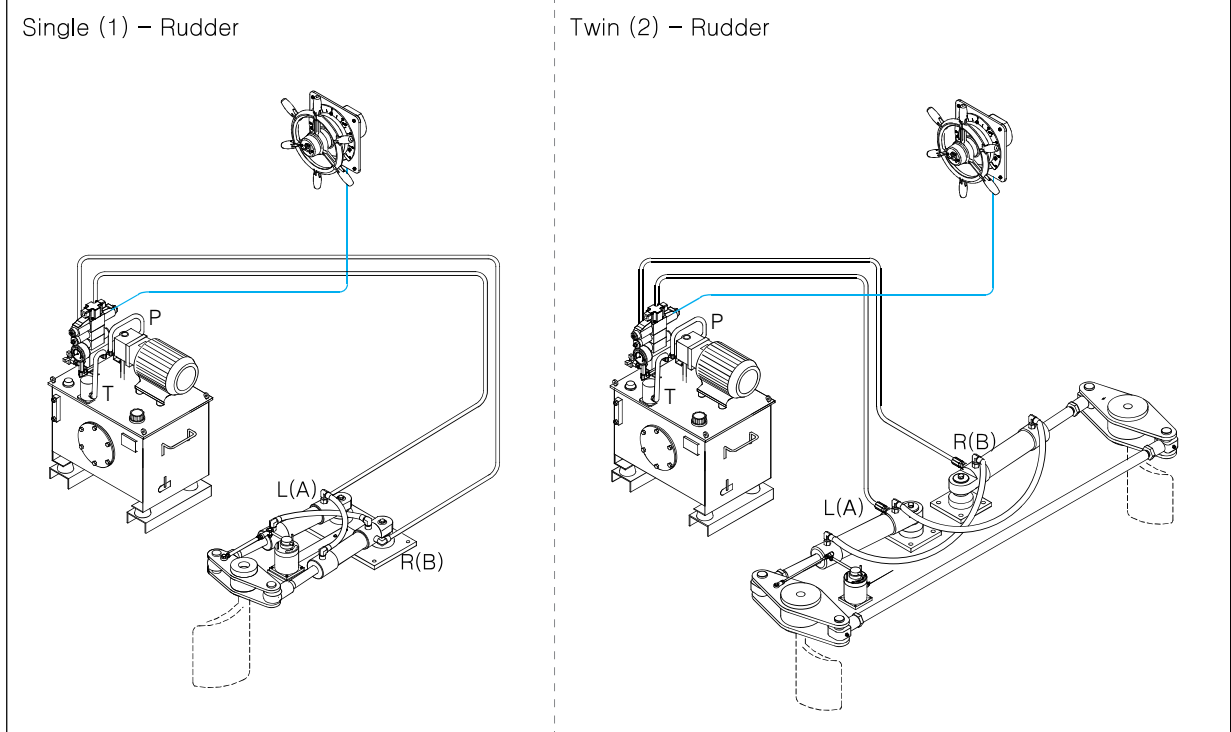


Electric Power Hydraulic Steering System (Solenoid Control)

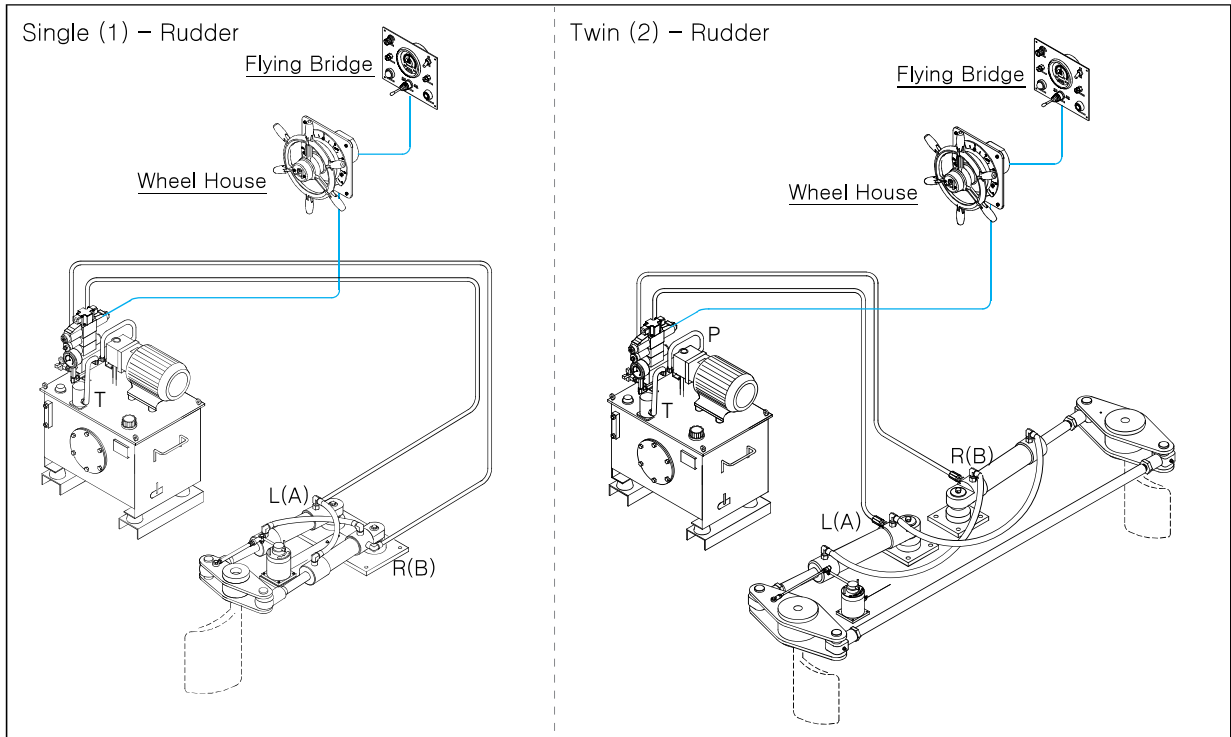
■ Electric Steering System (전기식)

1. Wheel House : Electric Helm Unit
(For Solenoid Control)
2. Power Pack : ① Single Power Pack
② Twin Power Pack (Option)

Single Station



Dual Station





Steering Cylinders



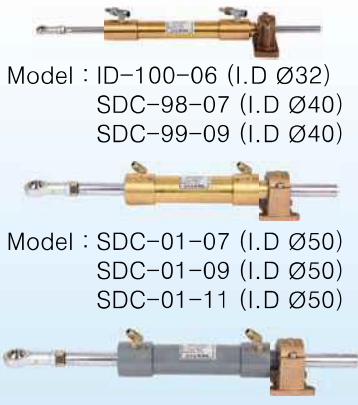


Cylinders

Cylinders & Tiller

14

Direct Cylinder




Model : ID-100-06 (I.D Ø32)
SDC-98-07 (I.D Ø40)
SDC-99-09 (I.D Ø40)

Model : SDC-01-07 (I.D Ø50)
SDC-01-09 (I.D Ø50)
SDC-01-11 (I.D Ø50)

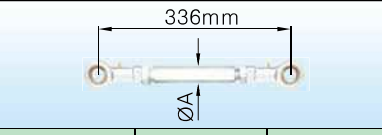
Model : SDC-02-09 (I.D Ø63)
SDC-02-11 (I.D Ø63)
SDC-02-16 (I.D Ø63)
SDC-03-09 (I.D Ø80)
SDC-03-12 (I.D Ø80)

Rotary Cylinder




Model : SRC-00 (I.D Ø63)
SRC-01 (I.D Ø80)

Connecting Rod (For Rotary Cylinder)



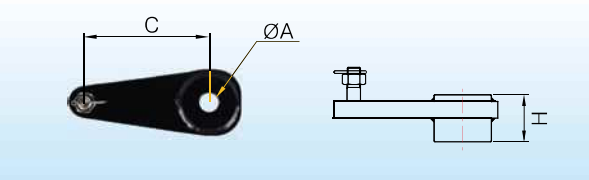
Model	CR-00	CR-01
ØA	Ø25	Ø25

Double Cylinder



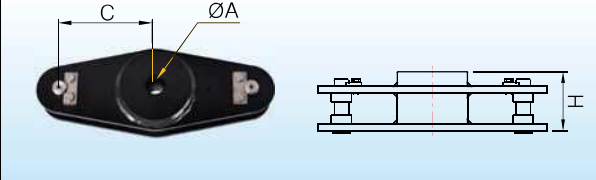
Model : SPC-01-170 (I.D Ø50)
SPC-01-226 (I.D Ø50)
SPC-02-226 (I.D Ø63)
SPC-02-290 (I.D Ø63)
SPC-03-300 (I.D Ø80)
SPC-03-360 (I.D Ø80)
SPC-04-300 (I.D Ø100)
SPC-04-360 (I.D Ø100)
SPC-05-310 (I.D Ø120)
SPC-05-390 (I.D Ø120)
SPC-06-360 (I.D Ø140)

Tiller (For Direct Cylinder & Rotary Cylinder)



Model	C(70°)	C(90°)	ØA Max.	H	Appl. Cylinder
ST-01-07	148	120	Ø45	70	SDC-01-07
ST-01-09	197	160	Ø45	70	SDC-01-09
ST-01-11	244	198	Ø45	70	SDC-01-11
ST-02-09	197	160	Ø50	70	SDC-02-09
ST-02-11	244	198	Ø50	70	SDC-02-11
ST-02-16	349	283	Ø50	70	SDC-02-16
ST-03-09	197	160	Ø60	85	SDC-03-09
ST-03-12	262	212	Ø60	85	SDC-03-12
ST-00	-	160	Ø50	70	SRC-00
ST-01	-	190(83°)	Ø50	70	SRC-01

Tiller (For Double Cylinder)

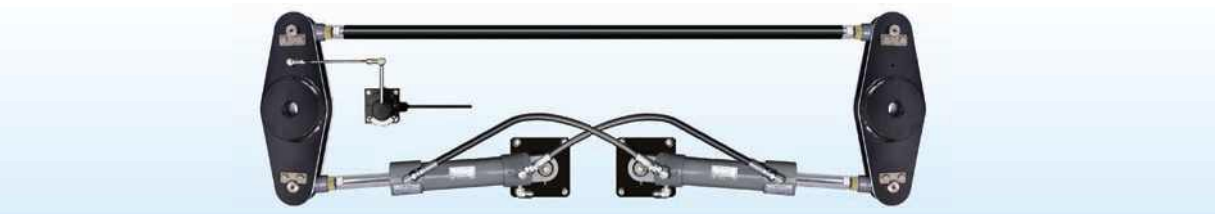


Model	C(70°)	C(90°)	ØA Max.	H	Appl. Cylinder
ST-01-170	148	120	Ø70	97	SPC-01-170
ST-01-226	197	160	Ø80	101	SPC-01-226
ST-02-226	197	160	Ø85	101	SPC-02-226
ST-02-290	253	206	Ø85	115	SPC-02-290
ST-03-300	262	212	Ø110	125	SPC-03-300
ST-03-360	314	255	Ø110	125	SPC-03-360
ST-04-300	262	212	Ø120	130	SPC-04-300
ST-04-360	314	255	Ø135	135	SPC-04-360
ST-05-310	270	220	Ø140	145	SPC-05-310
ST-05-390	340	276	Ø140	145	SPC-05-390
ST-06-360	315	255	Ø140	170	SPC-06-360

※ 적색은 주문제작임. (Red Color is Order-Based Manufacturing)

※ 적색은 주문제작임. (Red Color is Order-Based Manufacturing)

Double Cylinder(For Twin Rudder)



Model : SPC-01-170T (I.D Ø50) / SPC-01-226T (I.D Ø50) / SPC-02-226T (I.D Ø63)
SPC-02-290T (I.D Ø63) / SPC-03-300T (I.D Ø80) / SPC-03-360T (I.D Ø80)
SPC-04-300T (I.D Ø100) / SPC-04-360T (I.D Ø100) / SPC-05-310T (I.D Ø120)
SPC-05-390T (I.D Ø120) / SPC-06-360T (I.D Ø140)



Cylinders

Specifications

Specifications

Cylinder Model	Volume (cc)	30° Volume (cc)	Torque (Ton-m)				Stroke (mm)	Piston Dia. (mm)	Rod Dia. (mm)	Tiller Radius (mm)		Rudder Stock Max. Dia. (Ø)	
			70°		90°					70°	90°		
			Manual	Power	Manual	Power							
Direct Cylinder	ID-100-06	98	44	0.045	0.065	0.037	0.053	150	Ø32	Ø14	130	106	Ø38
	SDC-98-07	188	84	0.088	0.125	0.072	0.102	178	Ø40	Ø16	155	126	Ø38
	SDC-99-09	241	109	0.112	0.160	0.092	0.131	228	Ø40	Ø16	198	161	Ø38
	SDC-01-07	251	113	0.117	0.167	0.083	0.147	170	Ø50	Ø25	148	120	Ø45
	SDC-01-09	333	150	0.157	0.225	0.111	0.196	226	Ø50	Ø25	197	160	Ø45
	SDC-01-11	413	186	0.205	0.292	0.138	0.243	280	Ø50	Ø25	244	198	Ø45
	SDC-02-09	488	220	0.241	0.344	0.163	0.233	226	Ø63	Ø35	197	160	Ø50
	SDC-02-11	604	272	0.282	0.402	0.202	0.288	280	Ø63	Ø35	244	198	Ø50
	SDC-02-16	863	390	0.403	0.575	0.288	0.412	400	Ø63	Ø35	349	283	Ø50
	SDC-03-09	777	350	0.362	0.518	0.260	0.371	226	Ø80	Ø45	197	160	Ø60
	SDC-03-12	1031	467	0.482	0.689	0.344	0.492	300	Ø80	Ø45	262	212	Ø60
Rotary	SRC-00	235	-	-	-	0.134	0.191	75.4	Ø63	Ø47	-	160	Ø50
	SRC-01 (83°)	427	-	-	-	0.271	0.387	85	Ø80	Ø60	-	190	Ø50
Double Cylinder	SPC-01-170	547	247	0.25	0.36	0.19	0.26	170	Ø50	Ø30	148	120	Ø70
	SPC-01-226	728	329	0.34	0.48	0.25	0.35	226	Ø50	Ø30	197	160	Ø80
	SPC-02-226	1,192	538	0.55	0.79	0.40	0.57	226	Ø63	Ø35	197	160	Ø85
	SPC-02-290	1,530	691	0.71	1.01	0.51	0.73	290	Ø63	Ø35	253	206	Ø85
	SPC-03-300	2,539	1,149	1.18	1.69	0.85	1.21	300	Ø80	Ø45	262	212	Ø110
	SPC-03-360	3,048	1,376	1.42	2.03	1.02	1.46	360	Ø80	Ø45	314	255	Ø110
	SPC-04-300	4,000	1,809	1.87	2.67	1.34	1.91	300	Ø100	Ø55	262	212	Ø120
	SPC-04-360	4,802	2,168	2.24	3.20	1.61	2.29	360	Ø100	Ø55	314	255	Ø135
	SPC-05-310	6,129	2,768	2.85	4.07	2.06	2.94	310	Ø120	Ø60	270	220	Ø140
	SPC-05-390	7,718	3,486	3.61	5.15	2.85	3.69	390	Ø120	Ø60	340	276	Ø140
	SPC-06-360	9,493	4,303	4.43	6.33	3.18	4.54	360	Ø140	Ø75	315	255	Ø190
	SPC-06-460	12,129	5,477	5.63	8.04	4.05	5.78	460	Ø140	Ø75	401	325	Ø190
	SPC-06-520	13,701	6,188	6.36	9.08	4.57	6.53	520	Ø140	Ø75	453	367	Ø200
SPC-06-580	15,305	6,912	7.10	10.15	5.11	7.30	580	Ø140	Ø75	506	410	Ø200	
Double Cylinder (For Twin Rudder)	SPC-01-170T	547	247	0.25	0.36	0.19	0.26	170	Ø50	Ø30	148	120	Ø70
	SPC-01-226T	728	329	0.34	0.48	0.25	0.35	226	Ø50	Ø30	197	160	Ø80
	SPC-02-226T	1,192	538	0.55	0.79	0.40	0.57	226	Ø63	Ø35	197	160	Ø85
	SPC-02-290T	1,530	691	0.71	1.01	0.51	0.73	290	Ø63	Ø35	253	206	Ø85
	SPC-03-300T	2,539	1,149	1.18	1.69	0.85	1.21	300	Ø80	Ø45	262	212	Ø110
	SPC-03-360T	3,048	1,376	1.42	2.03	1.02	1.46	360	Ø80	Ø45	314	255	Ø110
	SPC-04-300T	4,000	1,809	1.87	2.67	1.34	1.91	300	Ø100	Ø55	262	212	Ø120
	SPC-04-360T	4,802	2,168	2.24	3.20	1.61	2.29	360	Ø100	Ø55	314	255	Ø135
	SPC-05-310T	6,129	2,768	2.85	4.07	2.06	2.94	310	Ø120	Ø60	270	220	Ø140
	SPC-05-390T	7,718	3,486	3.61	5.15	2.85	3.69	390	Ø120	Ø60	340	276	Ø140
	SPC-06-360T	9,493	4,303	4.43	6.33	3.18	4.54	360	Ø140	Ø75	315	255	Ø190
	SPC-06-460T	12,129	5,477	5.63	8.04	4.05	5.78	460	Ø140	Ø75	401	325	Ø190
	SPC-06-520T	13,701	6,188	6.36	9.08	4.57	6.53	520	Ø140	Ø75	453	367	Ø200
SPC-06-580T	15,305	6,912	7.10	10.15	5.11	7.30	580	Ø140	Ø75	506	410	Ø200	

※ SRC-01의 전타각도는 83° 임. (Turns lock to lock of SRC-01 is 83°)

※ 적색은 주문제작임. (Red Color is Order-Based Manufacturing)



Dimension of Cylinder

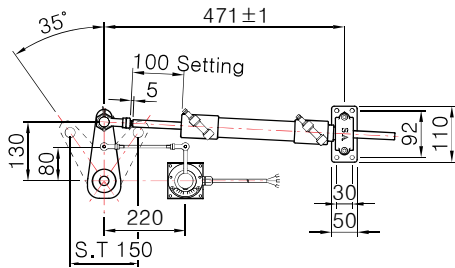
Dimension (Direct Cylinder)

16

Dimension (Direct Cylinder)

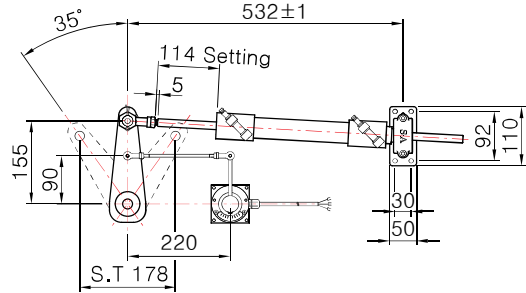
Unit : mm

Model : ID-100-06 (I.D Ø32) ※Tiller is option



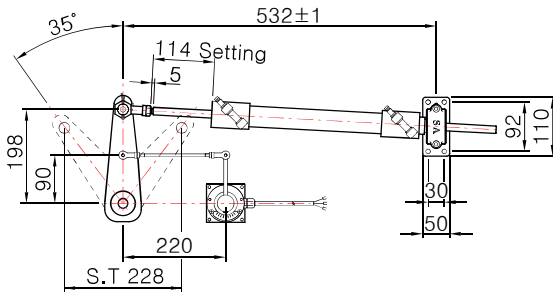
Installation Space (설치공간) : 800(L)×250(W)×100(H)

Model : SDC-98-07 (I.D Ø40) ※Tiller is option



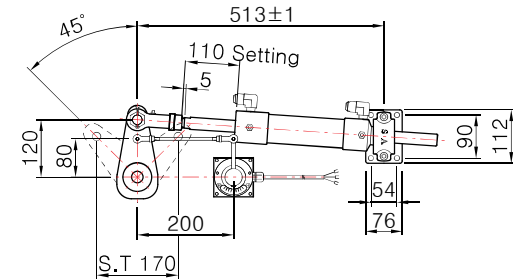
Installation Space (설치공간) : 950(L)×300(W)×150(H)

Model : SDC-99-09 (I.D Ø40) ※Tiller is option



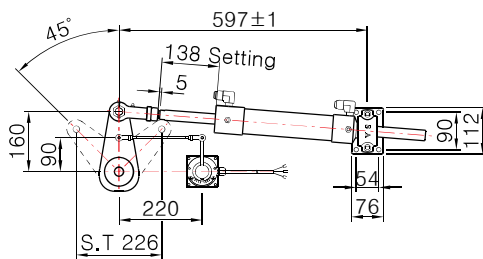
Installation Space (설치공간) : 1000(L)×300(W)×150(H)

Model : SDC-01-07 (I.D Ø50)



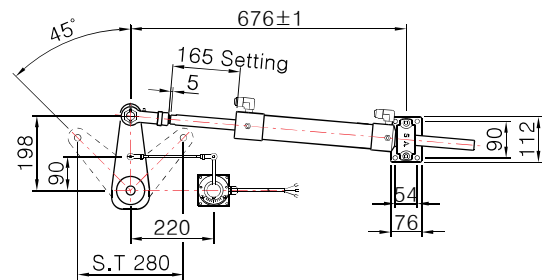
Installation Space (설치공간) : 1000(L)×300(W)×180(H)

Model : SDC-01-09 (I.D Ø50)



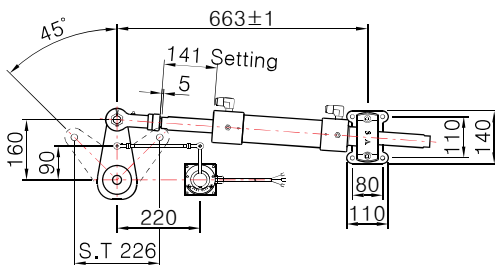
Installation Space (설치공간) : 1050(L)×300(W)×180(H)

Model : SDC-01-11 (I.D Ø50)



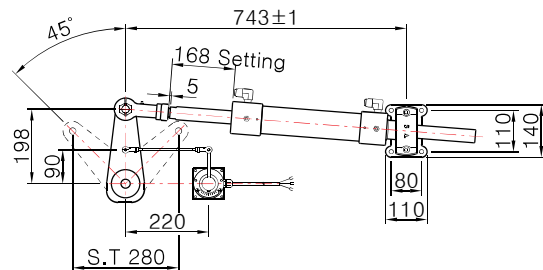
Installation Space (설치공간) : 1200(L)×350(W)×180(H)

Model : SDC-02-09 (I.D Ø63)



Installation Space (설치공간) : 1050(L)×300(W)×180(H)

Model : SDC-02-11 (I.D Ø63)



Installation Space (설치공간) : 1300(L)×350(W)×180(H)

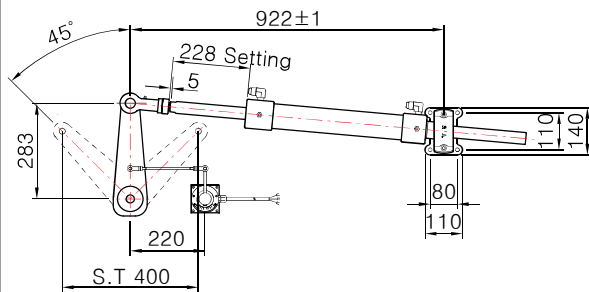


Dimension of Cylinder

Dimension (Direct Cylinder & Rotary Cylinder & Double Cylinder)

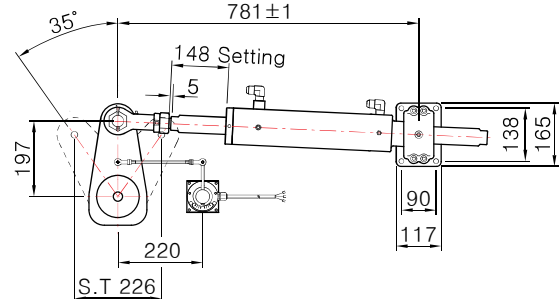
Dimension (Direct Cylinder & Rotary Cylinder & Double Cylinder)

Model : SDC-02-16 (I.D Ø63)



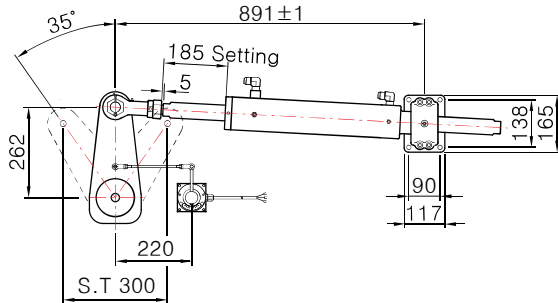
Installation Space (설치공간) : 1650(L)×400(W)×180(H)

Model : SDC-03-09 (I.D Ø80)



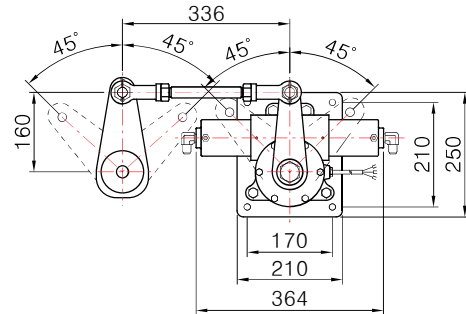
Installation Space (설치공간) : 1300(L)×400(W)×220(H)

Model : SDC-03-12 (I.D Ø80)



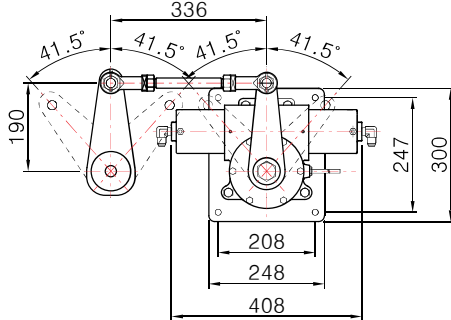
Installation Space (설치공간) : 1550(L)×450(W)×220(H)

Model : SRC-00 (I.D Ø63)



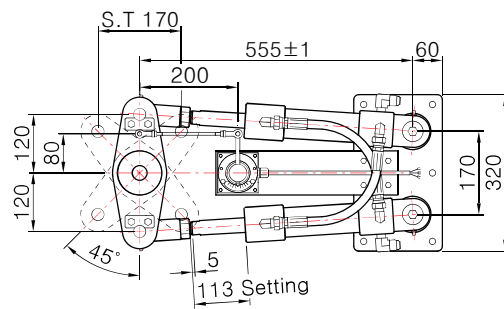
Installation Space (설치공간) : 750(L)×350(W)×320(H)

Model : SRC-01 (I.D Ø80)



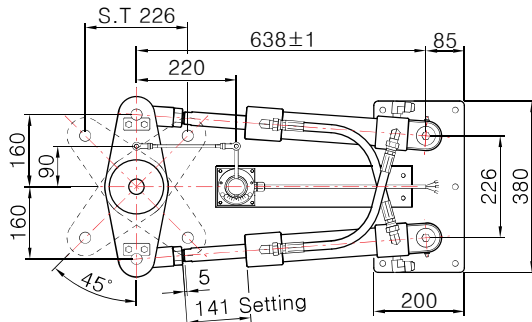
Installation Space (설치공간) : 800(L)×400(W)×320(H)

Model : SPC-01-170 (I.D Ø50)



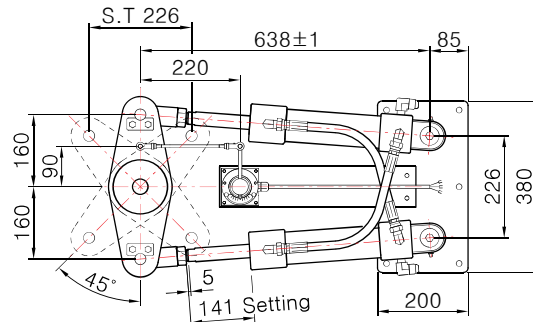
Installation Space (설치공간) : 800(L)×400(W)×250(H)

Model : SPC-01-226 (I.D Ø50)



Installation Space (설치공간) : 950(L)×500(W)×250(H)

Model : SPC-02-226 (I.D Ø63)



Installation Space (설치공간) : 950(L)×500(W)×250(H)



Dimension of Cylinder

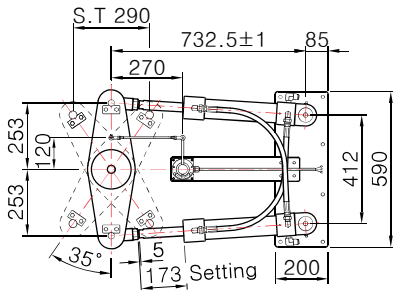
Dimmension (Double Cylinder)

Dimension (Double Cylinder)

Unit : mm

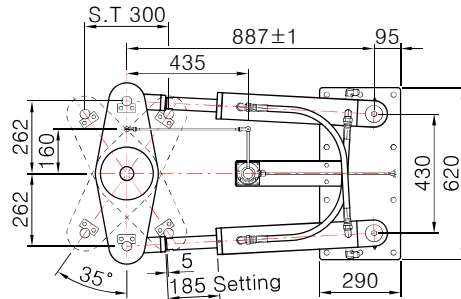
18

Model : SPC-02-290 (I.D Ø63)



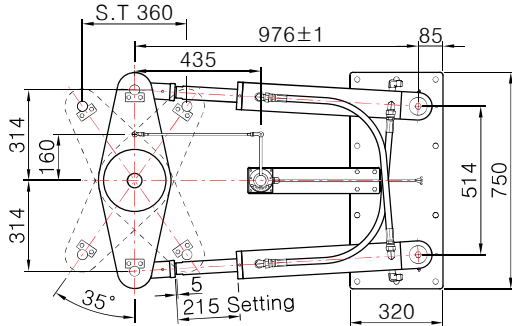
Installation Space (설치공간) : 1100(L)×650(W)×220(H)

Model : SPC-03-300 (I.D Ø80)



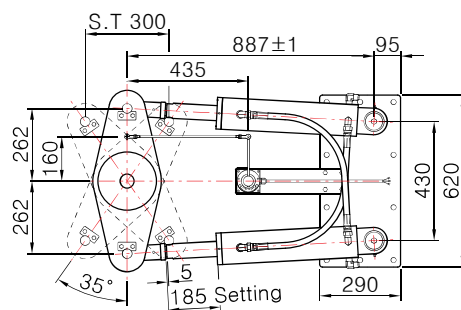
Installation Space (설치공간) : 1300(L)×720(W)×300(H)

Model : SPC-03-360 (I.D Ø80)



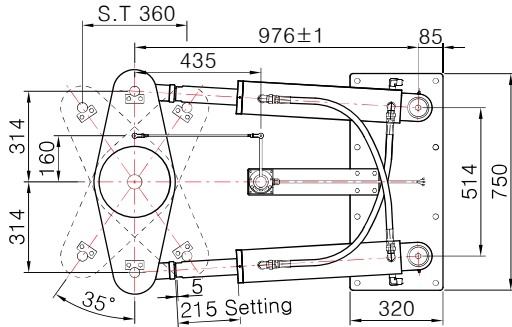
Installation Space (설치공간) : 1400(L)×850(W)×300(H)

Model : SPC-04-300 (I.D Ø100)



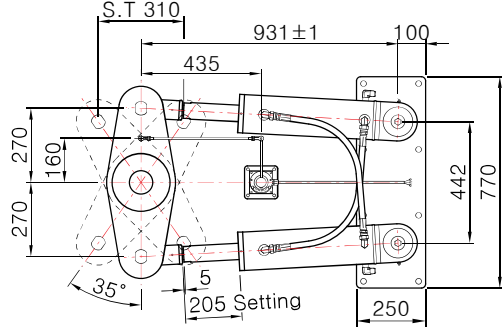
Installation Space (설치공간) : 1300(L)×720(W)×300(H)

Model : SPC-04-360 (I.D Ø100)



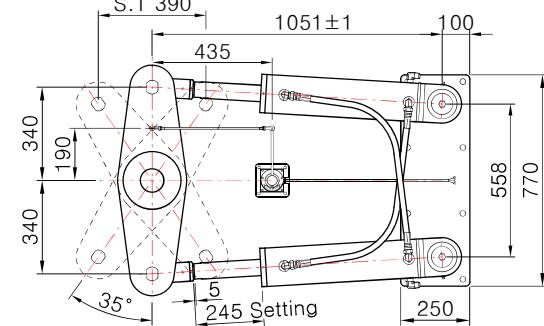
Installation Space (설치공간) : 1400(L)×850(W)×300(H)

Model : SPC-05-310 (I.D Ø120)



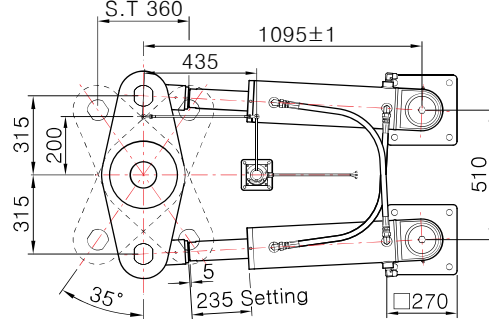
Installation Space (설치공간) : 1350(L)×800(W)×350(H)

Model : SPC-05-390 (I.D Ø120)



Installation Space (설치공간) : 1550(L)×950(W)×350(H)

Model : SPC-06-360 (I.D Ø140)



Installation Space (설치공간) : 1650(L)×950(W)×400(H)

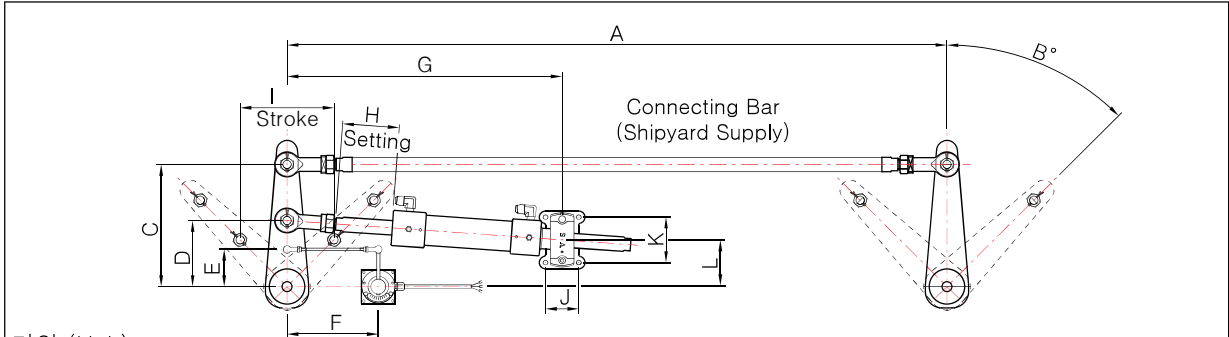


Dimension of Cylinder (For Twin Rudder)

For Twin Rudder – Direct & Double Cylinder Dimension

Direct Cylinder For Twin Rudder

※A는 최소 치수임. (A : Min. Distance)

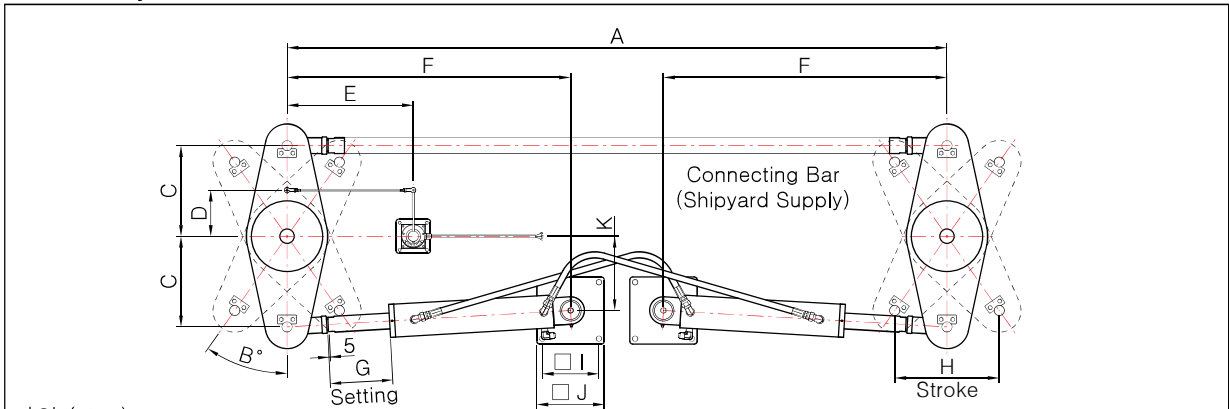


단위 (Unit) : mm

Model	A	B°	C	D	E	F	G	H	I	J	K	L
SDC-01-07T	800	45	220	120	80	200	513	110	170	54	90	84
SDC-01-09T	950	45	260	160	90	220	597	138	226	54	90	113
SDC-01-11T	1100	45	300	198	90	220	676	165	280	54	90	140
SDC-02-09T	1050	45	260	160	90	220	663	141	290	80	110	113
SDC-02-11T	1150	45	300	198	90	220	743	168	280	80	110	140
SDC-02-16T	1450	45	390	283	90	220	955	228	400	80	110	200
SDC-03-09T	1200	35	310	197	90	220	781	148	300	90	138	161
SDC-03-12T	1400	35	375	262	90	220	891	185	360	90	138	150

Double Cylinder For Twin Rudder

※A는 최소 치수임. (A : Min. Distance)



단위 (Unit) : mm

Model	A	B°	C	D	E	F	G	H	□ I	□ J	K
SPC-01-170T	1300	45	120	80	200	555	113	170	110	150	85
SPC-01-226T	1450	45	160	90	220	638	141	226	110	150	113
SPC-02-226T	1450	45	160	90	220	638	141	226	100	150	113
SPC-02-290T	1700	35	252	120	270	733	173	290	130	170	206
SPC-03-300T	2000	35	262	160	435	887	185	300	150	200	215
SPC-03-360T	2200	35	314	160	435	976	215	360	150	200	257
SPC-04-300T	2000	35	262	160	435	887	185	300	150	200	215
SPC-04-360T	2200	35	314	160	435	976	215	360	150	200	257
SPC-05-310T	2150	35	270	160	435	931	205	310	190	240	221
SPC-05-390T	2400	35	340	190	435	1051	245	390	190	240	278
SPC-06-360T	2500	35	315	200	435	1095	235	360	210	270	250



Accessories

Stopper, Tiller Angle Plate & Pointer, Limit Switch, Rod End Bearing & Tiller Pin

Stopper



Model	Ø A	H	K	Appl. Cylinder
STP-01-170	Ø35	150	4-Ø15 Holes	SPC-01-170
STP-01-226	Ø35	150	4-Ø15 Holes	SPC-01-226
STP-02-226	Ø35	150	4-Ø15 Holes	SPC-02-226
STP-02-290	Ø50	175	4-Ø19 Holes	SPC-02-290
STP-03-300	Ø50	175	4-Ø19 Holes	SPC-03-300
STP-03-360	Ø50	175	4-Ø19 Holes	SPC-03-360
STP-04-300	Ø50	175	4-Ø19 Holes	SPC-04-300
STP-04-360	Ø50	175	4-Ø19 Holes	SPC-04-360
STP-05-310	Ø55	220	4-Ø19 Holes	SPC-05-310
STP-05-390	Ø55	220	4-Ø19 Holes	SPC-05-390
STP-06-360	Ø55	220	4-Ø19 Holes	SPC-06-360

20

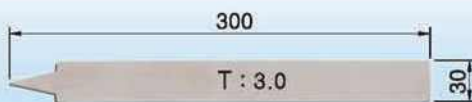
Tiller Angle Plate



Material : Brass

Model	Size (T×W×H)	R	Tiller Boss
TA-R57	T1×81.5×28	57	Ø120
TA-R62	T1×89×29.7	62	Ø130
TA-R65	T1×93×30.7	65	Ø140
TA-R73	T1×98×29	73	Ø150
TA-R88	T1×124.5×39.7	88	Ø185
TA-R95	T1×129×38	95	Ø200
TA-R100	T1×136.2×39.3	100	Ø210
TA-R118	T1×162.6×47	118	Ø245
TA-R135	T1×186.6×53	135	Ø285
TA-R160	T1×221×58.6	160	Ø330

Tiller Angle Pointer



Model : TAP-01
Material : Stainless Steel
Appl. Cylinder : All Cylinder Model

Limit Switch (with Plate)



Model : LS-01
Rating : 125VAC 10A, 250VAC 10A, 30VDC 6A

Rod End Bearing & Tiller Pin



Rod End Bearing



Tiller Pin

Manual Steering System



Manual with Power or Autopilot





Manual Hydraulic Steering System

Helm Pump – SSP Type (SSP-25 / 35 / 45 / 50)

특징

- 수동 유압조타에 최적화된 디자인
- 부드럽고 가벼운 조타 성능
- 축경 3/4" – 테이퍼 1:12 의 스테인레스 샤프트
- 부식 방지에 강한 알루미늄 다이캐스팅 본체
- 체크밸브 내장형
- 듀얼 스테이션 적용 가능
- 스티어링 휠의 최대 지름은 26인치 (660mm).

Features

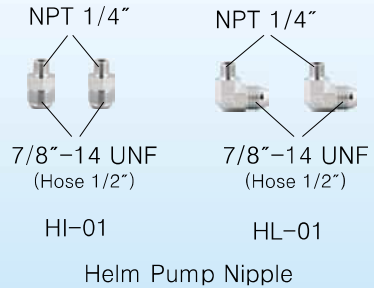
- Optimized design for manual steering system.
- Smooth and light performance.
- Stainless shaft with 3/4" – 1:12 standard taper.
- Aluminum Die-Casting main body guarantees strong anti corrosion.
- Built-in check valve.
- Dual station is applicable.
- Maximum steering wheel diameter 26 inch (660mm).

Helm Pump

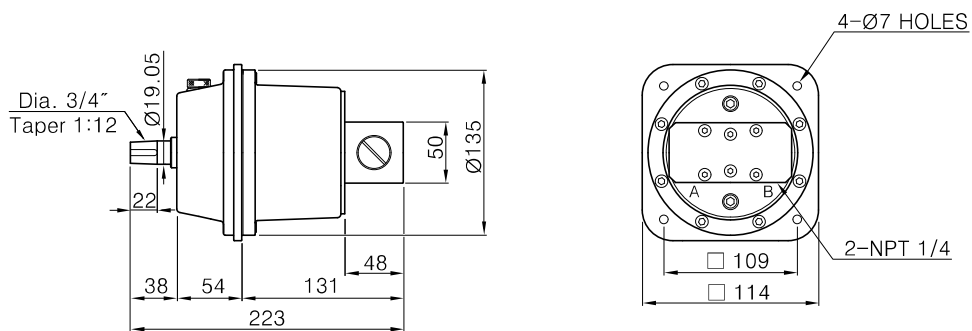
22



Model : SSP-25 / 35 / 45 / 50



Dimension



Helm Pump Specification

Model	Capacity	Piston Q'ty	Max. Pressure	Weight
SSP-25	25 cc/rev	9 EA	70 kgf/cm ²	6 kg
SSP-35	35 cc/rev	9 EA	70 kgf/cm ²	6 kg
SSP-45	45 cc/rev	9 EA	70 kgf/cm ²	6 kg
SSP-50	50 cc/rev	9 EA	70 kgf/cm ²	6 kg



Manual Hydraulic Steering System

Helm Pump – SSP Type (SSP-80 / 100)

특징

- AL 주조합금으로 제작된 하우징.
(더욱 강한 부식방지와 압력 내성 보유)
- 체크밸브 내장형.
- 높은 토출량을 통해 적은 전타수 및 부드럽고 가벼운 조타 성능.
- 크롬 도금된 내구성이 우수한 샤프트.
- 다양한 휠 장착 가능.
(축경 3/4" - 테이퍼 1:12 및 1" 스트레이트 샤프트)
- 스티어링 휠의 최대 지름은 30인치 (760mm).

Features

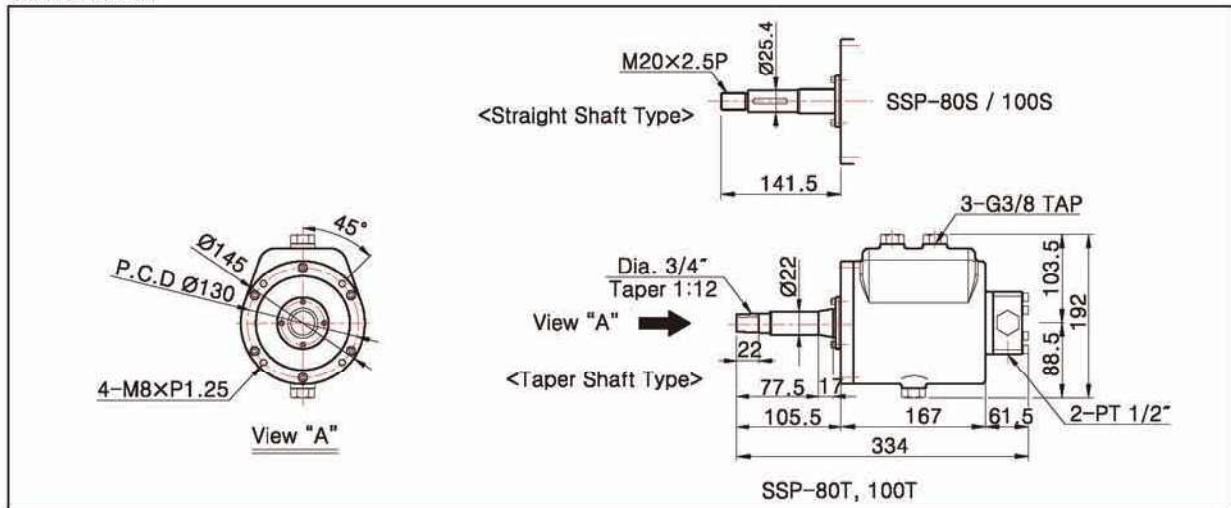
- Housing is made by AL Casting Alloy
(better anti corrosion and pressure resistance.)
- Built-in Check-valve
- Less turns lock to lock, smooth and light performance based on high output.
- Chrome plating shaft with excellent durability.
- Compatibility with varied Steering Wheel.
(Wheel with Holes for 3/4" - 1:12 tapered shaft and 1" straight shaft)
- Maximum steering wheel diameter 30 inch (760mm).

Helm Pump



23

Dimension



Helm Pump Specification

Model	Capacity	Piston Q'ty	Max. Pressure	Shaft Taper	Weight
SSP-80T / SSP-80E	80 cc/rev	7 EA	70 kgf/cm ²	Dia. 3/4"-Taper 1/12	11 kg
SSP-80S	80 cc/rev	7 EA	70 kgf/cm ²	Ø25.4 (1" Straight)	11 kg
SSP-100T / SSP-100E	100 cc/rev	7 EA	70 kgf/cm ²	Dia. 3/4"-Taper 1/12	11 kg
SSP-100S	100 cc/rev	7 EA	70 kgf/cm ²	Ø25.4 (1" Straight)	11 kg



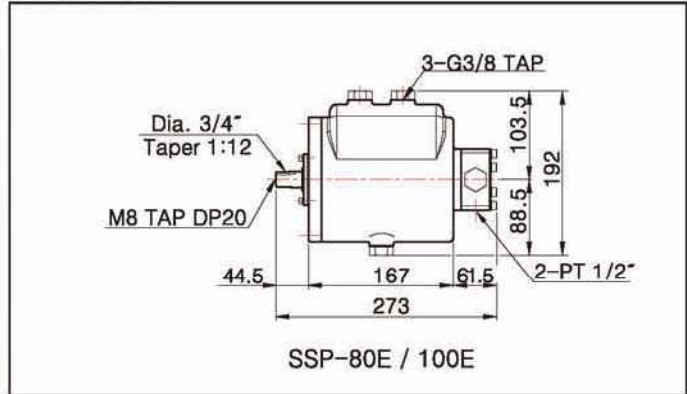
Manual Hydraulic Steering System

Helm Pump – SSP Type (SSP-80E / 100E)

Helm Pump



Dimension



※사양은 23 페이지 참조 (Refer to 23 Page Spec.)

24

Select (Helm Pump)

Standard Heavy

	Cylinder			Turns lock to lock (Wheel Turns)						
	Model	Volume (cc)	Torque (Ton-m)		Helm Pump (cc/rev)					
			70°	90°	SSP-25	SSP-35	SSP-45	SSP-50	SSP-80	SSP-100
Direct Cylinder	ID-100-06	98	0.045	0.037	3.9	2.8				
	SDC-98-07	188	0.088	0.072		5.4	4.2			
	SDC-99-09	241	0.112	0.092		6.9	5.4			
	SDC-01-07	251	0.117	0.083		7.2	5.6			
	SDC-01-09	333	0.157	0.111			7.4	6.7		
	SDC-01-11	413	0.205	0.138			9.2	8.3		
	SDC-02-09	488	0.241	0.163			10.8	9.8		
	SDC-02-11	604	0.282	0.202				12.1	7.5	
	SDC-02-16	863	0.403	0.288					10.8	8.6
	SDC-03-09	777	0.362	0.260					9.7	7.7
Rotary	SDC-03-12	1,030	0.482	0.344					12.9	10.3
	SRC-00	235	-	0.134		6.7	5.2			
Double Cylinder	SRC-01 (83°)	427	-	0.271			9.5	8.5		
	SPC-01-170	547	0.25	0.19				10.9	6.8	
	SPC-01-226	728	0.34	0.25				14.5	9.1	7.2
	SPC-02-226	1,192	0.55	0.40					14.9	11.9
	SPC-02-290	1,530	0.71	0.51					19.1	15.3
	SPC-03-300	2,539	1.18	0.85					31.7	25.4
	SPC-03-360	3,048	1.42	1.02					38.1	30.5
Double Cylinder (for Twin Rudder)	SPC-01-170T	547	0.25	0.19				10.9	6.8	
	SPC-01-226T	728	0.34	0.25				14.5	9.1	7.2
	SPC-02-226T	1,192	0.55	0.40					14.9	11.9
	SPC-02-290T	1,530	0.71	0.51					19.1	15.3
	SPC-03-300T	2,539	1.18	0.85					31.7	25.4
	SPC-03-360T	3,048	1.42	1.02					38.1	30.5

※ SRC-01의 전타각도는 83° 임. (Turns lock to lock of SRC-01 is 83°)

※ 적색은 주문제작임. (Red Color is Order-Based Manufacturing)

※ 휠 바꾸수 계산공식. (Wheel Turns formulas calculation) : Cylinder Volume (cc) ÷ Helm Pump (cc/rev) = Wheel Turns (rev)



Manual Hydraulic Steering System

Manual Stand

Manual Stand Full Set Model



Model : MLT-100-25 / 35 / 45 / 50
(Front Mounted)

Component: Helm Pump
Square Plate
Steering Wheel



Model : MS-01-25 / 35 / 45 / 50
(Top Mounted)

Component: Helm Pump
Box Stand
Steering Wheel



Model : MS-02-25 / 35 / 45 / 50
(Top Mounted)

Component: Helm Pump
Desk Stand
R.A. Gauge
Steering Wheel



Model : MLT-200-80 / 100
(Front Mounted)

Component: Helm Pump
Circle Flange
Steering Wheel



Model : MLT-300-80 / 100
(Top Mounted)

Component: Helm Pump
L-Type
Steering Wheel



Model : MS-03-25 / 35 / 45 / 50
(Vertical Mounted)

Component: Helm Pump
Long Stand
R.A. Gauge Panel
Steering Wheel



Model : MS-04-80 / 100
(Vertical Mounted)

Component: Helm Pump
Long Stand
R.A. Gauge Panel
Steering Wheel



Model : MS-04J-80 / 100
(Vertical Mounted)

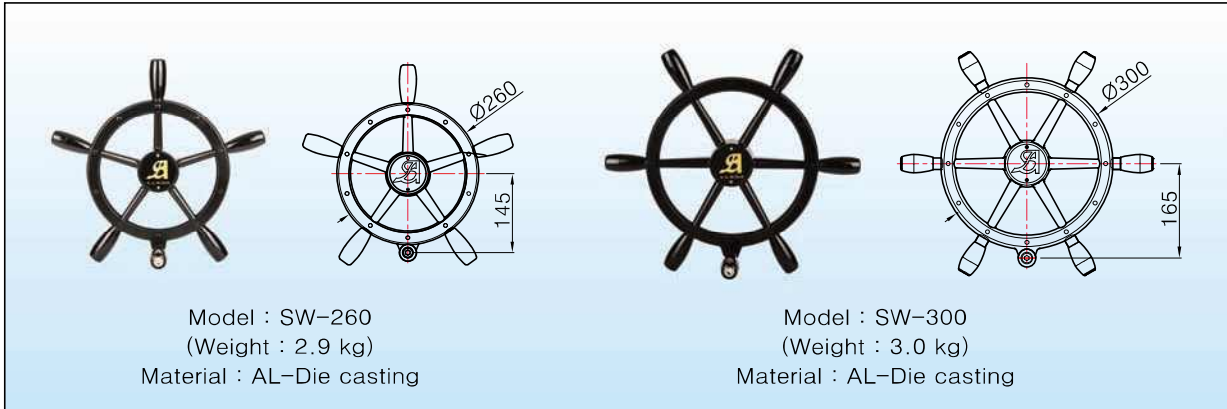
Component: Helm Pump
Long Stand
R.A. Gauge Panel
Built-in Joystick
Steering Wheel



Accessory For Steering Gear

Wheel, Oil & oil Injection Hose, Hyd. Hose, Header Tank, R.A. Sensor

Wheel



26

Oil & Oil Injection Hose, Hyd. Hose



Header Tank



R.A. Sensor

Model	A	B	Application
SCC-01-01	80	200	Standard
SCC-01-02	90	220	
SCC-01-03	120	270	
SCC-01-04	120	435	
SCC-01-05	160	435	
SCC-01-06	200	435	
SCC-03-01	80	200	Autopilot
SCC-03-02	90	220	
SCC-03-03	120	270	
SCC-03-04	120	435	
SCC-03-05	160	435	
SCC-03-06	200	435	
SCC-01-TWO-01	80	200	Wheel House R.A. Gauge & Steering Gear Room R.A. Gauge
SCC-01-TWO-02	90	220	
SCC-01-TWO-03	90	270	
SCC-01-TWO-04	120	435	
SCC-01-TWO-05	160	435	
SCC-01-TWO-06	200	435	



Accessory For Steering Gear

R.A. Indicator


특징

- 전원 DC12V/DC24V (8V~35V)겸용으로 사용가능함.
- 게이지에 중심각, 최대각, 불밝기 조절, 전원 ON/OFF 스위치가 있어서 조작이 편리함.
- LED 전구를 사용하여 전구수명이 반영구 적임.
- 메인 게이지의 신호로 다수의 게이지를 병렬로 연결이 가능함. (병렬로 연결된 게이지들의 중심각, 최대각을 각각 조절 가능)


Features

- Can be used with both DC12V/DC24V(8V~35V).
- Including center angle, maximum angle, Bright control, and ON/OFF switch which can be easily adjusted from the panel.
- LED lamp guarantees semipermanent durability.
- Allow parallel connection to multiple indicators with the signal from the main indicator. (Each parallel connected indicators can adjust its center angle and maximum angle)


R.A. Indicator




G-01
(Standard)




SG-01/02/04/05



SG-03
다이얼 리모트용
(For Dial Remote)




SG-05J
(For MS-04 / PS-04)
Built-in Joystick




G-02
전면
(Front)


G-02
후면
(Rear)




GW-01
Wall Mount
(For Single)



GW-02
Wall Mounted
(For Twin)



GW-03
Wall Mounted
(For Water proof)



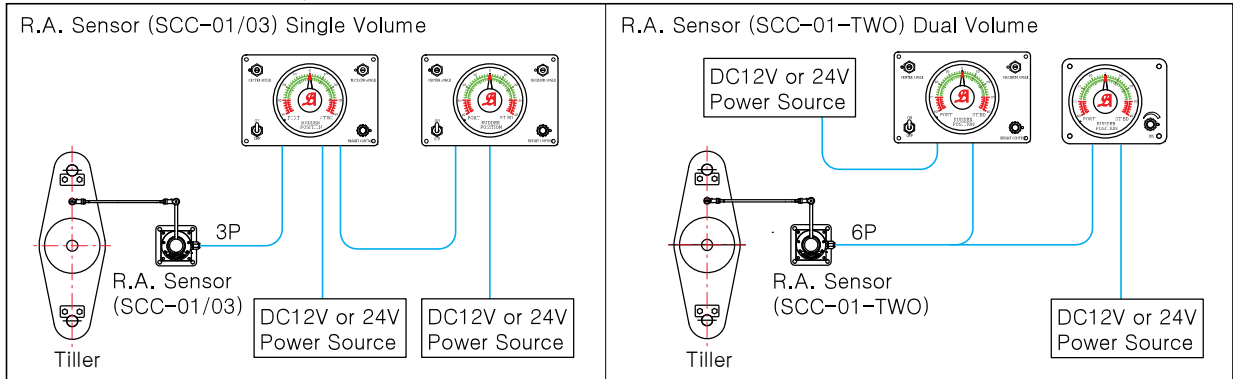
Standard Set

SG-01 SCC-01

Model	Description	Size (W×H)
G-01	SG 패널 조립형 (SG Panle Assembled Type)	Ø80
G-02	GW 패널 조립형 (GW Panle Assembled Type)	Ø80
SG-01	스탠드 일체형 (Standard Panel Type)	180×120
SG-02	조이스틱 리모트용 (For Joystick Remote)	180×120
SG-03	다이얼 리모트용 (For Dial Remote)	180×120
SG-04	오토파일럿용 (For Autopilot)	180×120
SG-05	MS-04 / PS-04용 (For MS-04 / PS-04)	239×193

공급 전원(Power Source) : DC 12V / 24V 공용(For Common Use)

게이지 활용 예 (Example for Parallel Connection)





Manual Hydraulic Steering System

Helm Pump with Remote Device

특징

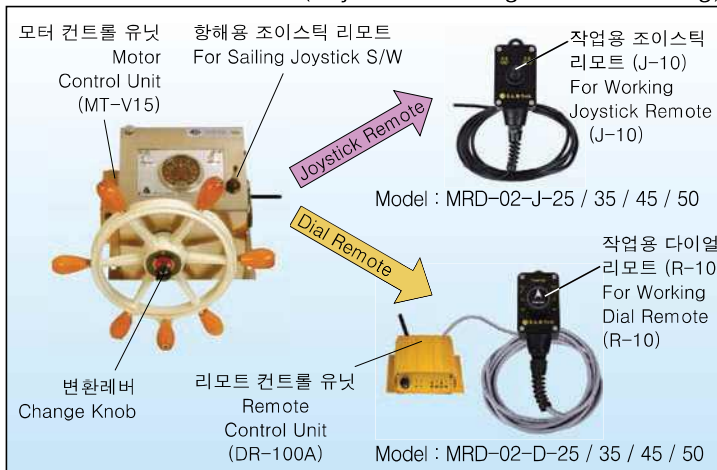
- 헬름펌프 구동과 조이스틱 스위치 구동을 병행할수 있는 일체형 스탠드
- 다양한 헬름펌프 토출량에 따라 실린더 속도 조절가능
- 콤팩트하게 일체화 된 타입으로 간단한 설치
- 항해시 조이스틱 스위치로 가볍게 조타
- 조이스틱 리모콘(MRD-J)또는 다이알 리모콘(MRD-D)로 선상 밖에서 자유롭게 조타 가능

Features

- Integrated stand which can choose Helm Pump operating and Joystick switch.
- Various output of helm pump offer adjustment of cylinder speed.
- Easy installation by compact integrated type.
- Easy operating by Joystick Switch during sailing.
- Operating outside from wheel house is possible by Joystick Remote system (MRD-J) or Dial Remote System(MRD-D).

28

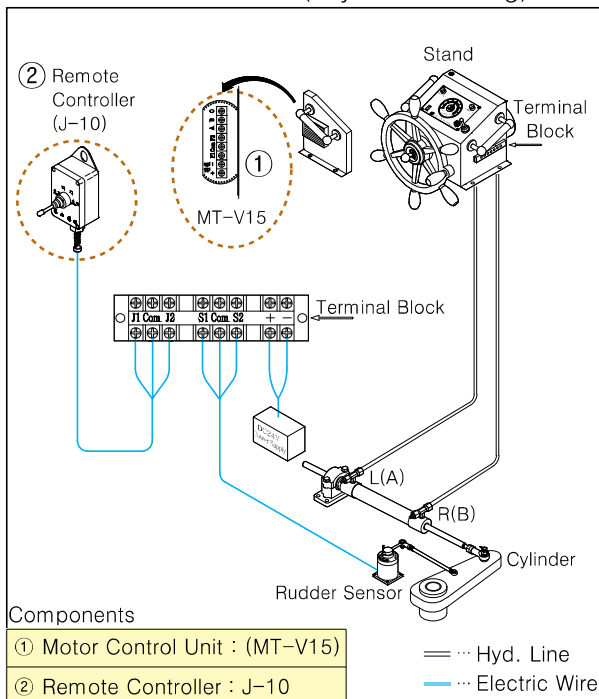
Manual Remote Device (Joystick Steering & Dial Steering)



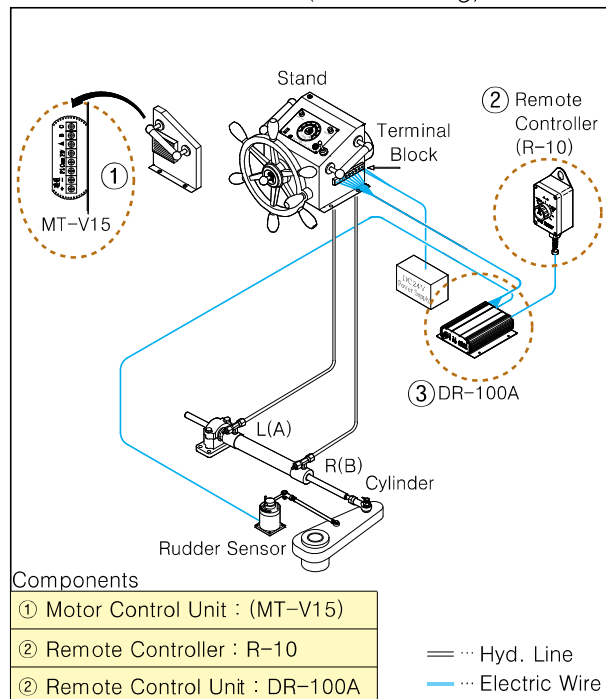
Specification

Model	MRD-J	MRD-D
Power Source	DC 24V	
Max. Current	7 A	
Motor	DC 24V, 120W, 3000 rpm	
Helm Pump	SSP-25 / 35 / 45 / 50	
Setting Pressure	35 kgf/cm ²	
Motor Control Unit	MT-V15	
Remote Control Unit	-	DR-100A
Remote Controller	J-10	R-10

Manual Remote Device (Joystick Steering)



Manual Remote Device (Dial Steering)





Manual Remote Device with Autopilot

Manual Remote Device

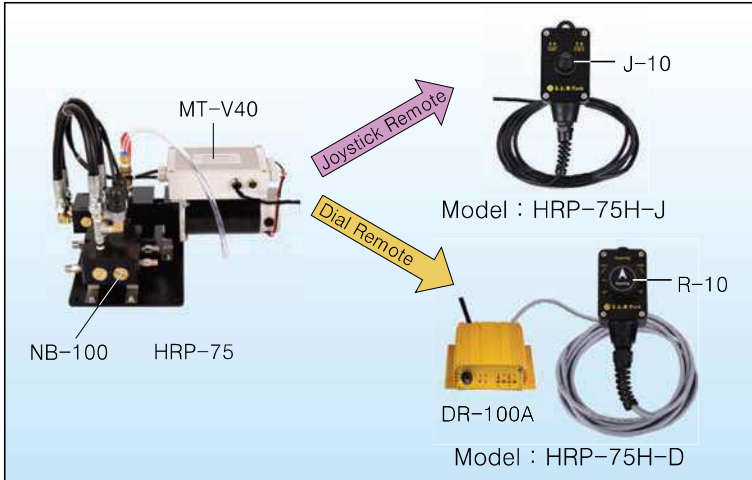
특징

- 헬 하우스의 Helm Pump와 병렬로 사용 가능
- 자유로운 토출유량 조절로 실린더 속도조절 가능
- 콤팩트하게 일체화 된 타입으로 간단한 설치
- 조이스틱 리모콘 시스템 (HRP-75H-J) 또는 다이얼 리모콘 시스템 (HRP-75H-D)로 선상밖에서 자유롭게 조타할 수 있음.
- Auto Pilot 연결 사용 가능.

Features

- Parallel connection with Helm Pump from wheel house is possible.
- Free flow control adjustment provides adjustment of cylinder speed.
- Easy installation by compact integrated type.
- Operating outside from wheel house is possible by Joystick Remote system (HRP-75H-J) or Dial Remote System (HRP-75H-D).
- It can be connected with Autopilot.

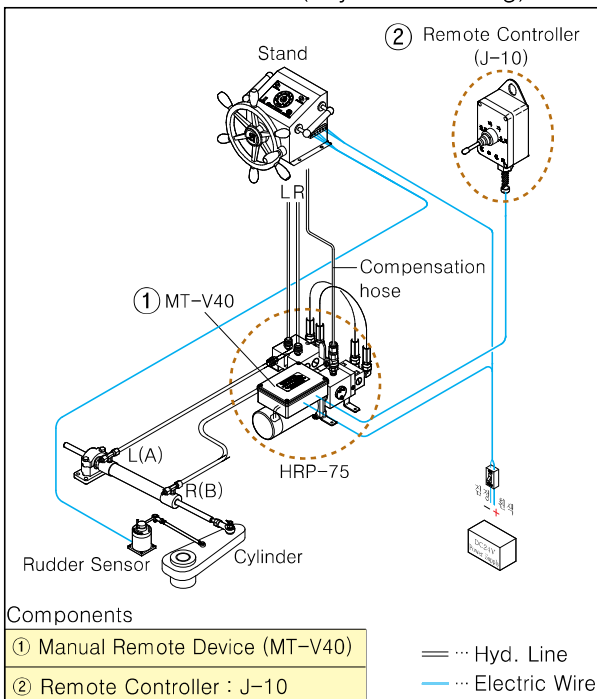
Manual Remote Device (Joystick Steering & Dial Remote Steering)



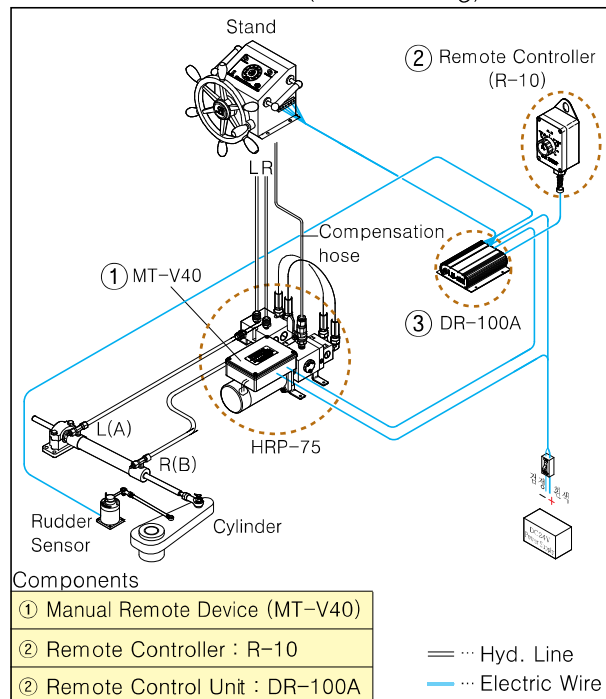
Specification

Model	HRP-75H-J	HRP-75H-D
Power Source	DC 24V	
Max. Current	11.7A	
Motor	DC 24V, 200W, 1800 rpm	
Pump Capacity	Max 3.2 l/min	
Setting Pressure	35 kgf/cm ²	
Motor Plunger Pump	HRP-75	
Non-Return Valve	NB-100	
Motor Control Unit	MT-V40	
Remote Controller	J-10	R-10
Remote Control Unit	-	DR-100A

Manual Remote Device (Joystick Steering)



Manual Remote Device (Dial Steering)





Accessory

Valve

Non-Return By-pass Valve

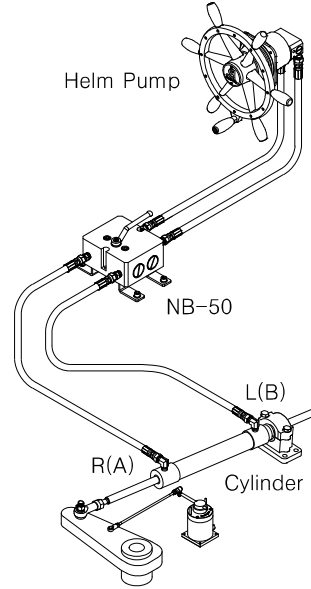


Model : NB-50

30

용도 : 1) 바이패스 기능과 체크밸브 기능이 이중으로 필요시 설치

Use : 1) Install when bypass function and check-valve function are required.



Non-Return Valve

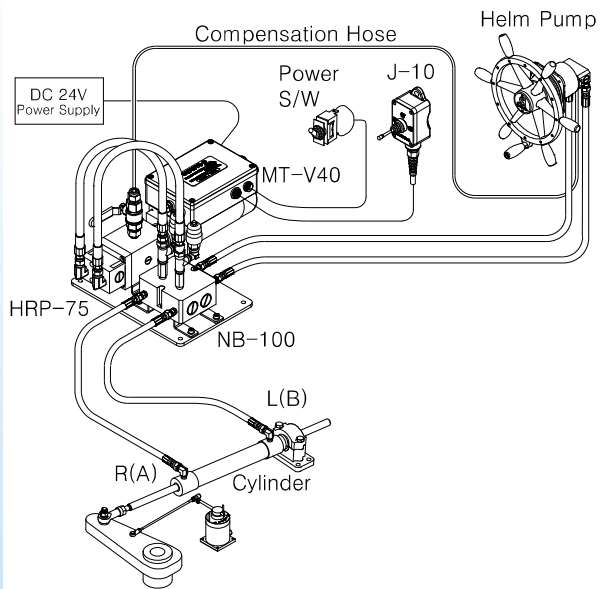


Model : NB-100

용도 : 1) HRP-75와 헬름펌프를 병렬로 연결시 설치
2) 듀얼 스테이션 스티어링 필요시 설치

Use : 1) Install when connect HRP-75 and Helm pump as parallel.

2) Install when dual station steering is required.



By-pass Valve



Model : BV-01 (For 3/8" Hose)
BV-02 (For 1/2" Hose)

용도 : 1) 유압라인 이상 또는 비상시에 빠른 틸러 스티어링으로 전환이 필요시 설치

Use : 1) Install when changeover to tiller steering rapidly in case of emergency and / or hydraulic line is abnormal.

Power Steering System





Power Hydraulic Steering System

Steering Unit, Flange & Shaft

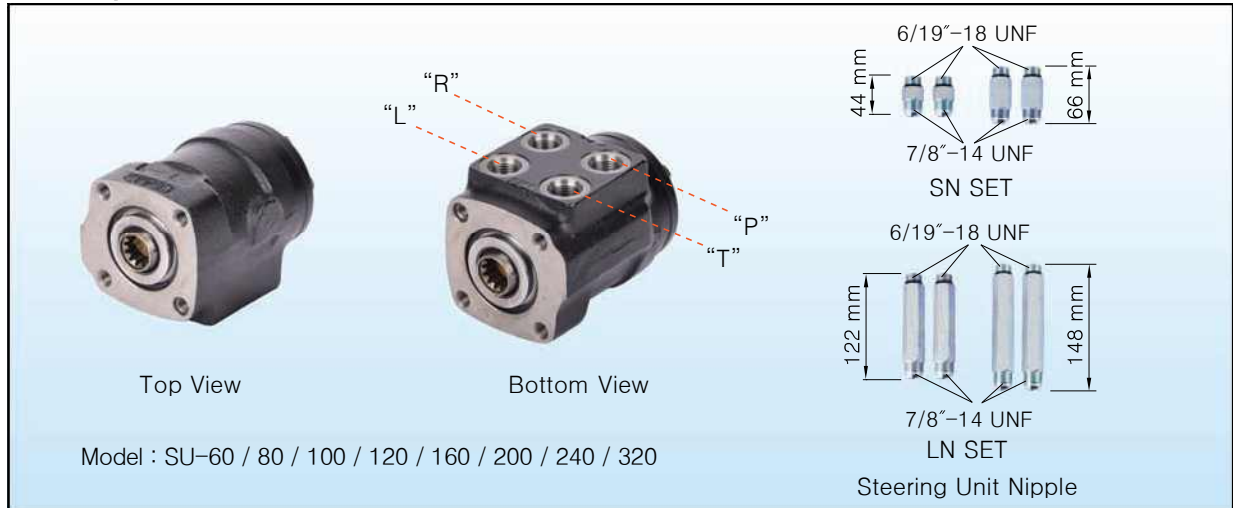
특징

- 파워 스티어링 시스템에 의한 가벼운 핸들 조작과 경쾌한 운전 보장 및 운전자의 피로 경감
- 스티어링 스피드에 비례하는 유량 토출로 손쉬운 조타 방향 제어
- 다양한 볼륨의 모델
(60cc/rev, 80cc/rev, 100cc/rev, 120cc/rev, 160cc/rev, 200cc/rev, 240cc/rev, 320cc/rev)

Features

- Guaranteeing easy and light steering and reducing tiredness of User.
- Easy control for steering direction by oil output of proportional of steering speed.
- Various volume model
(60cc/rev, 80cc/rev, 100cc/rev, 120cc/rev, 160cc/rev, 200cc/rev, 240cc/rev, 320cc/rev)

Steering Unit (Power)



Flange & Shaft



Front Mounting Flange Set



Steering Unit Specification

Model	Capacity	Max. Pressure	Weight	Model	Capacity	Max. Pressure	Weight
SU-60	60 cc/rev	175 kgf/cm ²	5.0 kg	SU-160	160 cc/rev	175 kgf/cm ²	5.6 kg
SU-80	80 cc/rev	175 kgf/cm ²	5.1 kg	SU-200	200 cc/rev	175 kgf/cm ²	5.6 kg
SU-100	100 cc/rev	175 kgf/cm ²	5.1 kg	SU-240	240 cc/rev	175 kgf/cm ²	5.8 kg
SU-120	120 cc/rev	175 kgf/cm ²	5.3 kg	SU-320	320 cc/rev	175 kgf/cm ²	6.2 kg



Power Hydraulic Steering System

Select (Steering Unit)

Select (Steering Unit)

Standard

Cylinder		Turns lock to lock (Wheel Turns)											
		Model	Volume (cc)	Torque (Ton-m)		Steering Unit (cc/rev)							
				70 °	90 °	SU-60	SU-80	SU-100	SU-120	SU-160	SU-200	SU-240	SU-320
Direct Cylinder	SDC-01-07	251	0.167	0.147	4.2	3.1	2.5						
	SDC-01-09	333	0.225	0.196		4.2	3.3	2.8					
	SDC-01-11	413	0.292	0.243		5.2	4.1	3.4					
	SDC-02-09	488	0.344	0.233			4.9	4.1					
	SDC-02-11	604	0.402	0.288			6.0	5.0	3.8				
	SDC-02-16	863	0.575	0.412				7.2	5.4				
	SDC-03-09	777	0.518	0.371				6.5	4.9	3.9			
	SDC-03-12	1,030	0.689	0.492					6.4	5.2			
Rotary	SRC-00	235	-	0.191	3.9	2.9	2.3						
	SRC-01 (83°)	427	-	0.387		5.3	4.3						
Double Cylinder	SPC-01-170	547	0.36	0.26			5.5	4.6	3.4				
	SPC-01-226	728	0.48	0.35			7.3	6.1	4.6				
	SPC-02-226	1,192	0.79	0.57				9.9	7.5	6.0			
	SPC-02-290	1,530	1.01	0.73					9.6	7.7			
	SPC-03-300	2,539	1.69	1.21						12.7	10.6		
	SPC-03-360	3,048	2.03	1.46							12.7	9.5	
	SPC-04-300	4,000	2.67	1.91							16.7	12.5	
	SPC-04-360	4,802	3.20	2.29							20.0	15.0	
	SPC-05-310	6,129	4.07	2.94								19.1	
	SPC-05-390	7,718	5.15	3.69								24.1	
	SPC-06-360	9,439	6.33	4.54								29.5	
Double Cylinder (For Twin Rudder)	SPC-01-170T	547	0.36	0.26			5.5	4.6	3.4				
	SPC-01-226T	728	0.48	0.35			7.3	6.1	4.5				
	SPC-02-226T	1,192	0.79	0.57				9.9	7.5	6.0			
	SPC-02-290T	1,530	1.01	0.73					9.6	7.7			
	SPC-03-300T	2,539	1.69	1.21						12.7	10.6		
	SPC-03-360T	3,048	2.03	1.46							12.7	9.5	
	SPC-04-300T	4,000	2.67	1.91							16.7	12.5	
	SPC-04-360T	4,802	3.20	2.29							20.0	15.0	
	SPC-05-310T	6,129	4.07	2.94								19.1	
	SPC-05-390T	7,718	5.15	3.69								24.1	
	SPC-06-360T	9,439	6.33	4.54								29.5	

※ SRC-01의 전타각도는 83° 임. (Turns lock to lock of SRC-01 is 83°)

※ **적색**은 주문제작임. (Red Color is Order-Based Manufacturing)

※ **휠 바퀴수** 계산공식. (Wheel Turns formulars calculation) : Cylinder Volume (cc) ÷ Steering Unit (cc/rev) = Wheel Turns (rev)



Power Hydraulic Steering System

Power Stand

Power Stand Full Set Model



Model : PLT-100-60 / 80 / 100
120 / 160 / 200
240 / 320
(Front Mounted)

Components : Steering Unit
Square Plate
Steering Wheel



Model : PS-01-60 / 80 / 100
120 / 160 / 200
240 / 320
(Top Mounted)

Components : Steering Unit
Box Stand
Steering Wheel



Model : PS-02-60 / 80 / 100
120 / 160 / 200
240 / 320
(Top Mounted)

Components : Steering Unit
Desk Stand
R.A. Gauge
Steering Wheel



Model : PS-03-60 / 80 / 100
120 / 160 / 200
240 / 320
(Vertical Mounted)

Components : Steering Unit
Long Stand
R.A. Gauge Panel
Steering Wheel



Model : PS-04-60 / 80 / 100
120 / 160 / 200
240 / 320
(Vertical Mounted)

Components : Steering Unit
Long Stand
R.A. Gauge Panel
Steering Wheel



Model : PS-04J-60 / 80 / 100
120 / 160 / 200
240 / 320
(Vertical Mounted)

Components : Steering Unit
Long Stand
R.A. Gauge Panel
Built-in Joystick
Steering Wheel

Full Set Components

Stand	PLT-100	PS-01	PS-02	PS-03	PS-04	PS-04J
Steering Wheel	SW-260					
Fitting	6/19"-18UNF×7/8"-14UNF					
R. A. Gauge	Option G-02		SG-01		SG-05 or SG-05J	



Power Hydraulic Steering System

Oil Pump (Engine Driving), Oil Pump Full Set, Electric Clutch, Oil Tank

Oil Pump (Engine Driving)

Model : A13-E / A18-E	Model : V10-E	Model : B18-E / B24-E B38-E	Model : B18-S / B24-S (Spline Shaft)		
Model	Shaft	Displacement	Speed Range	Max. Pressure	Weight
A13-E	Ø26	13 l/min at 1,000 rpm	500 rpm ~ 3,500 rpm	105 kgf/cm ²	6.3 kg
A18-E	Ø26	18 l/min at 1,000 rpm	500 rpm ~ 3,500 rpm	105 kgf/cm ²	6.0 kg
V10-E	Ø26	18 l/min at 1,000 rpm	500 rpm ~ 3,500 rpm	105 kgf/cm ²	6.0 kg
B18-E	Ø26	18 l/min at 1,000 rpm	600 rpm ~ 3,400 rpm	105 kgf/cm ²	9.0 kg
B24-E	Ø26	24 l/min at 1,000 rpm	600 rpm ~ 2,800 rpm	105 kgf/cm ²	9.7 kg
B40-E	Ø26	40 l/min at 1,000 rpm	600 rpm ~ 2,400 rpm	105 kgf/cm ²	10.2 kg
B18-S	SAE 13T	18 l/min at 1,000 rpm	600 rpm ~ 3,400 rpm	105 kgf/cm ²	9.0 kg
B24-S	SAE 13T	24 l/min at 1,000 rpm	600 rpm ~ 2,800 rpm	105 kgf/cm ²	9.7 kg

Oil Pump Full Set

Model : OP-A13 OP-A18	Model : OP-V10	Model : OP-B18 / B24 / B40
Model : OPF-01 Engine or Motor Driving	Model : OPF-02 Engine Driving	Model : OPF-03 Motor Driving
A Type & V10 특징 (Feature) · 오른방향 회전 (R/V only right) · 릴리프 내장형 (Relief inside)	B Type 특징 (Feature) · 양방향 회전 (R/V Both ways) · 릴리프 외장형 (Relief outside)	

Electric Clutch (For Oil Pump Drive)

Model	Pump	Pulley	Power
EC-20-18	18l/min	7"xB Type	DC 24V
EC-20-24	24l/min		

Oil Tank

Model : OT-10 / 01 / 02 (Wall Mounted)	Model : OT-03 / 03A / 04 (Floor Fixed)	Model : OT-02S (28l)	Option (Material : Stainless Steel)	
Model	Oil Capacity	Size (H × D × H)	Applications	Weight
OT-10	10 l	240 × 188 × 404	For Stern Drive or Header Tank	10.9 kg
OT-01	20 l	320 × 208 × 480	For SG-0.2TM~SG-0.5TM	14.3 kg
OT-02	28 l	380 × 208 × 550	For SG-0.6TM~SG-1.0TM	17.8 kg
OT-03	40 l	460 × 280 × 545	For SG-1.5TM~SG-6.3TM	23.7 kg
OT-03A	40 l	480 × 310 × 485	For Two Pump Drive	27.0 kg
OT-04	80 l	632 × 403 × 565	For Many Purposes	52.7 kg



Power Hydraulic Steering System

Oil Pump (Motor Driving), Power Pack

Oil Pump (Motor Driving)

  		
G-06M A13-M / A18-M B18-M / B24-M / B38-M		
Model	Shaft	Control Flow (At 50Hz 1,450 rpm 60Hz 1,750 rpm)
G-06M	Ø14.10	8.7 ℓ/min / 50Hz 10.5 ℓ/min / 60Hz
A13-M	Ø19.05	13.5 ℓ/min / 50Hz 13.9 ℓ/min / 60Hz
A18-M	Ø19.05	19.9 ℓ/min / 50Hz 20.2 ℓ/min / 60Hz
B18-M	Ø19.05	23.5 ℓ/min / 50Hz 24.2 ℓ/min / 60Hz
B24-M	Ø19.05	35.8 ℓ/min / 50Hz 39.8 ℓ/min / 60Hz
B38-M	Ø19.05	49.4 ℓ/min / 50Hz 59.6 ℓ/min / 60Hz

Power Pack

36

  		
Model : PP-3X-A-50 / 60 PP-6X-A-50 / 60 PP-8X-A-50 / 60 For Steering Unit		
Model : PP-3S-C-50 / 60 PP-6S-C-50 / 60 PP-8S-C-50 / 60 For Solenoid Control		
Model : PP-3S-DT-50 / 60 PP-6S-DT-50 / 60 PP-8S-DT-50 / 60 For Solenoid Control		

Model	Motor HP (kW)	Oil Pump	Oil Capacity	Relief Valve	Oil Level Switch	Return Line Filter	Solenoid Valve	Module Relief Valve	Module Pilot Check Valve
PP-3X-A-50 / 60	3HP (2.2 kW)	A13-M	45 ℓ	○	-	-	-	-	-
PP-6X-A-50 / 60	5HP (3.7 kW)	A18-M	60 ℓ	○	-	-	-	-	-
PP-8X-A-50 / 60	7.5HP (5.5 kW)	B24-M	100 ℓ	○	-	-	-	-	-
PP-3X-B-50 / 60	3HP (2.2 kW)	A13-M	45 ℓ	○	○	○	-	-	-
PP-6X-B-50 / 60	5HP (3.7 kW)	A18-M	60 ℓ	○	○	○	-	-	-
PP-8X-B-50 / 60	7.5HP (5.5 kW)	B24-M	100 ℓ	○	○	○	-	-	-
PP-3S-A-50 / 60	3HP (2.2 kW)	A13-M	45 ℓ	-	-	-	○	○	-
PP-6S-A-50 / 60	5HP (3.7 kW)	A18-M	60 ℓ	-	-	-	○	○	-
PP-8S-A-50 / 60	7.5HP (5.5 kW)	B24-M	100 ℓ	-	-	-	○	○	-
PP-3S-B-50 / 60	3HP (2.2 kW)	A13-M	45 ℓ	-	○	○	○	○	-
PP-6S-B-50 / 60	5HP (3.7 kW)	A18-M	60 ℓ	-	○	○	○	○	-
PP-8S-B-50 / 60	7.5HP (5.5 kW)	B24-M	100 ℓ	-	○	○	○	○	-
PP-3S-C-50 / 60	3HP (2.2 kW)	A13-M	45 ℓ	-	○	○	○	○	○
PP-6S-C-50 / 60	5HP (3.7 kW)	A18-M	60 ℓ	-	○	○	○	○	○
PP-8S-C-50 / 60	7.5HP (5.5 kW)	B24-M	100 ℓ	-	○	○	○	○	○
PP-3S-DS-50 / 60	3HP (2.2 kW) × 2	A13-M × 2	90 ℓ	-	○	○	○	○	○
PP-6S-DS-50 / 60	5HP (3.7 kW) × 2	A18-M × 2	120 ℓ	-	○	○	○	○	○
PP-8S-DS-50 / 60	7.5HP (5.5 kW) × 2	B24-M × 2	200 ℓ	-	○	○	○	○	○
PP-3S-DT-50 / 60	3HP (2.2 kW) × 2	A13-M × 2	90 ℓ	-	○ × 2	○ × 2	○ × 2	○ × 2	○ × 2
PP-6S-DT-50 / 60	5HP (3.7 kW) × 2	A18-M × 2	120 ℓ	-	○ × 2	○ × 2	○ × 2	○ × 2	○ × 2
PP-8S-DT-50 / 60	7.5HP (5.5 kW) × 2	B24-M × 2	200 ℓ	-	○ × 2	○ × 2	○ × 2	○ × 2	○ × 2

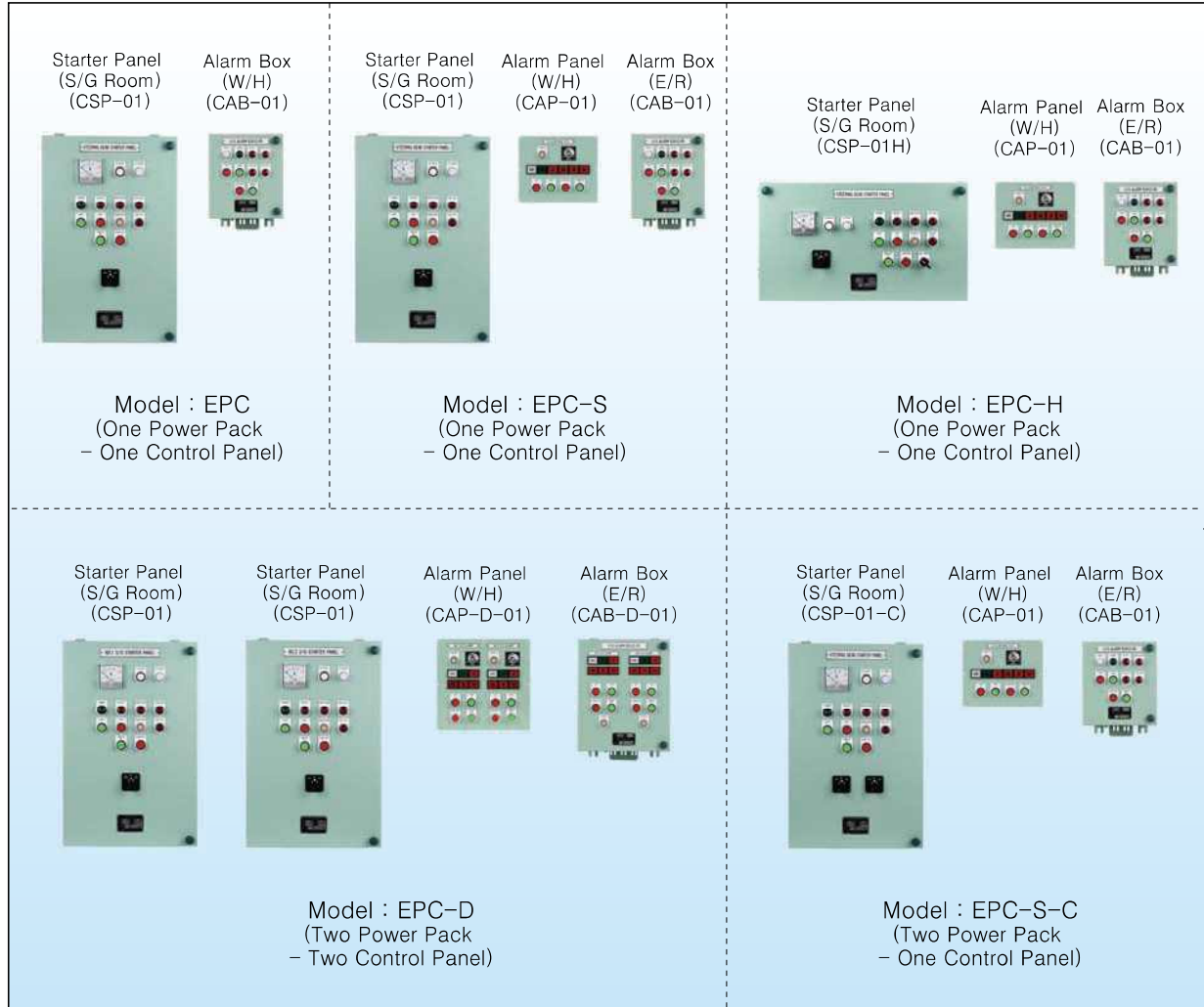


Power Hydraulic Steering System

Electric Control Panel

Electric Control Panel

S/G Room : Steering Gear Room, W/H : Wheel House, E/R : Engine Room



Set Model	Item	Model	Installation Location	Size (W×H×D) mm	Weight
EPC	Starter Panel	CSP-01	Steering Gear Room	450×700×200	29.2 KG
	Alarm Box	CAB-01	Wheel House	280×320×150	8.4 KG
EPC-S	Starter Panel	CSP-01	Steering Gear Room	450×700×200	29.2 KG
	Alarm Panel	CAP-01	Wheel House	300×250×2T	2.5 KG
	Alarm Box	CAB-01	Engine Room	280×320×150	8.4 KG
EPC-H	Starter Panel	CSP-01H	Steering Gear Room	700×400×200	29.2 KG
	Alarm Panel	CAP-01	Wheel House	300×250×2T	2.5 KG
	Alarm Box	CAB-01	Engine Room	280×320×150	8.4 KG
EPC-D	Starter Panel (No.1)	CSP-01	No.1 Steering Gear Room	450×700×200	29.2 KG
	Starter Panel (No.2)	CSP-01	No.2 Steering Gear Room	450×700×200	29.2 KG
	Alarm Panel	CAP-D-01	Wheel House	350×350×2T	4.2 KG
	Alarm Box	CAB-D-01	Engine Room	350×430×130	12.6 KG
EPC-S-C	Starter Panel	CSP-01-C	Steering Gear Room	450×700×200	29.2 KG
	Alarm Panel	CAP-01	Wheel House	350×350×2T	2.5 KG
	Alarm Box	CAB-01	Engine Room	320×280×150	8.4 KG



Power Hydraulic Steering System

Power Remote Device – Remote Solenoid & Block (Joystick & Dial)

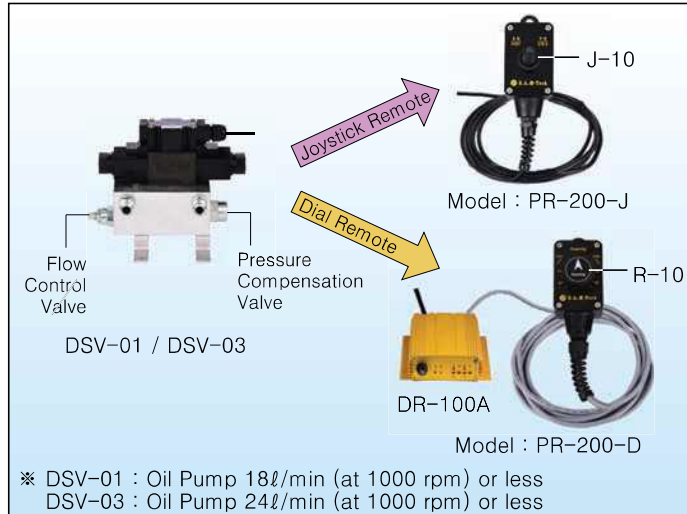
특징

- 유량조절과 압력보상, 오일온도 급상승 방지시스템을 적용, 장비의 고장을 방지하여 긴 수명을 보장한다.
- 유량 조절 밸브 내장으로 3초에서 28초까지 자유롭게 전타 속도 조정 가능하다.
- 리모콘 컨트롤러 (J-10) 조작으로 장소에 구애를 받지 않고 운전 가능 (PR-200-J)
- 리모트 컨트롤러(R-10)에서 러더각 및 러더방향을 확인하면서 장소에 구애를 받지 않고 운전 가능 (PR-200-D)

Features

- Applying Flow control, Pressure compensation, and preventing Sudden Rise of oil temperature prevent breakdown of equipment and guarantee long durability.
- Built-in Flow Control Valve provides free adjustment of turns lock to lock from 3 sec to 28 sec.
- Remote Controller (J-10) provides operating the ship any place (PR-200-J).
- Remote Controller (R-10) provides operating the ship any place (PR-200-D).

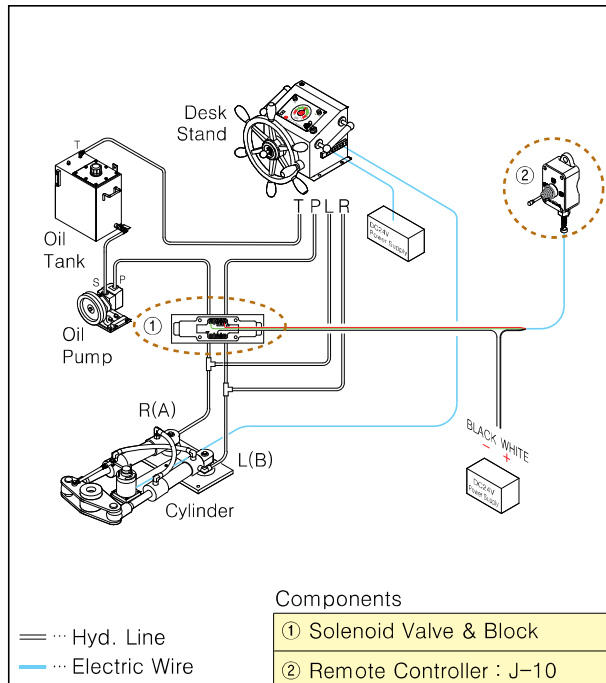
Power Remote Device (Joystick Steering & Dial Steering) Specification



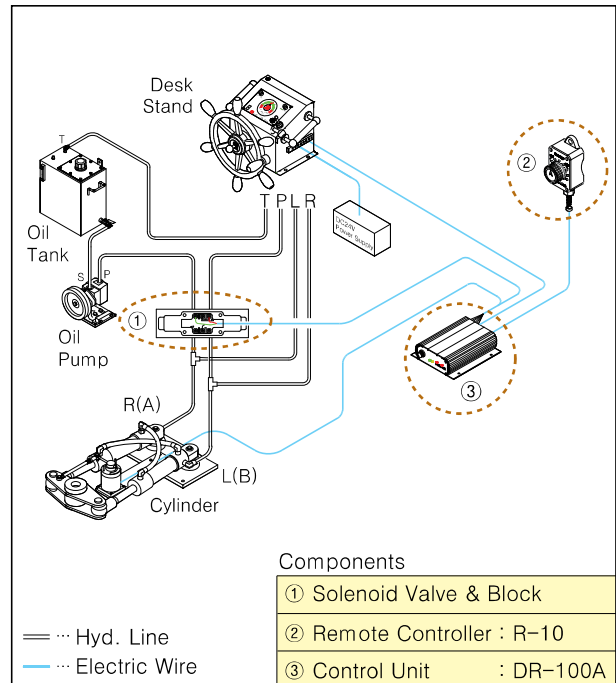
Model	PR-200-J	PR-200-D
Power Source	DC 24V	
Solenoid Valve & Block	DSV-01 / DSV-03	
Remote Controller	J-10	R-10
Remote Controller Unit	-	DR-100A
Solenoid Valve Operating Range	18V ~ 30V	

38

Power Remote System (with Joystick Remote)



Power Remote System (with Dial Remote)





Engine Remote Control System

TCB-100A, DS-100

TCB-100A Actuator & Remote Controller

- For Single-function control by Two lever each
- Use SB-Twin & ST-Single



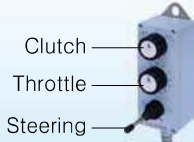
TCB-100A
(For SB-Twin)



R-20-E

Remote Controller

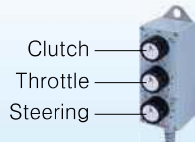
조이스틱 리모트 조타
+ 엔진리모트용



J-30

For One Engine SB-Twin
Joystick Steering
(Non Follow-up)

다이얼 리모트 조타
+ 엔진리모트용



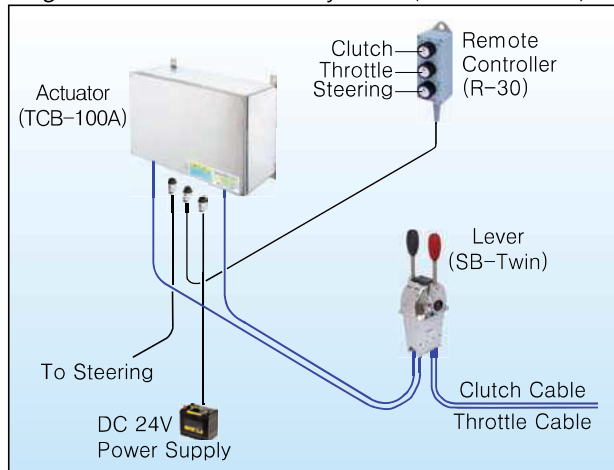
R-30

For One Engine SB-Twin
Dial Steering
(Follow-up)

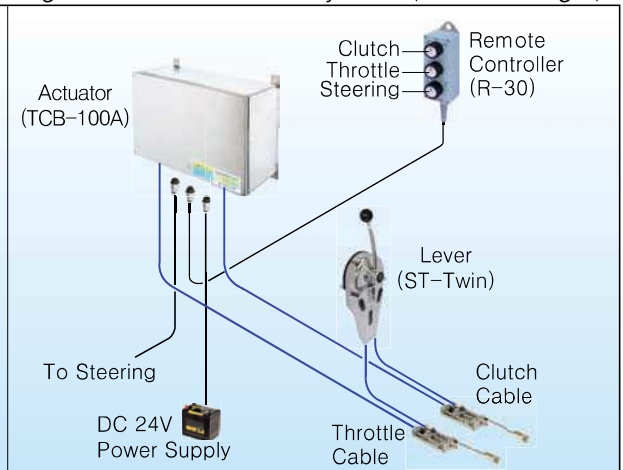
TCB-100A Specifications

Model		TCB-100A
Controlling method	Clutch	3-Position Control ; (Ahead-Neutral-Astern)
	Throttle	Linear Control (Following-up principle)
Power Source		DC 24V
Cable Actuating Force	Clutch	25 kg Max.
	Throttle	45 kg Max.
Cable Actuating Speed	Clutch	About 1.5 sec (Ahead-Neutral-Astern)
	Throttle	About 2.8 sec (Dead slow to Max. full)
Power Consumption	Normal	Less than 1.3A
	Clutch Control	Starting : Max 8.5A at DC 24V
	Throttle Control	Starting : Max 8.5A at DC 24V
Push-Pull Cable		S.A. C33. Ultra C8, Morse 33C
Applications		Two Lever, Single Lever
Steering (Rudder Turning Speed)		90° / 6 ~ 8 sec

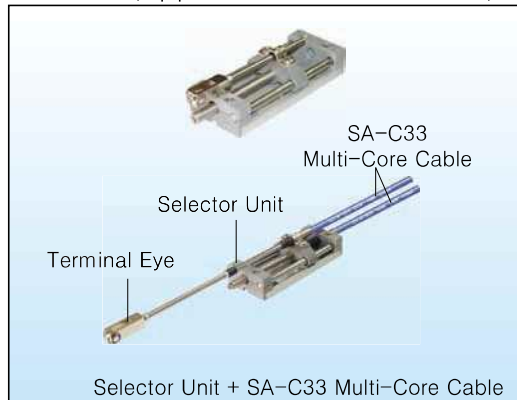
Engine Remote Control System (For SB-Twin)



Engine Remote Control System (For ST-Single)

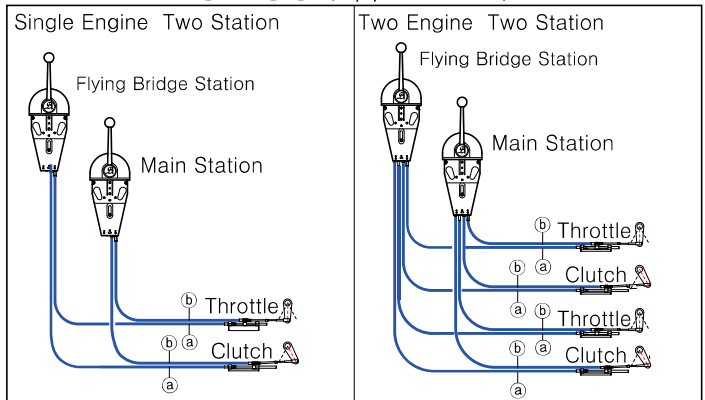


DS-100 (Application : Dual Station)



Selector Unit + SA-C33 Multi-Core Cable

DS-100 선택 장치 응용 (Applications)

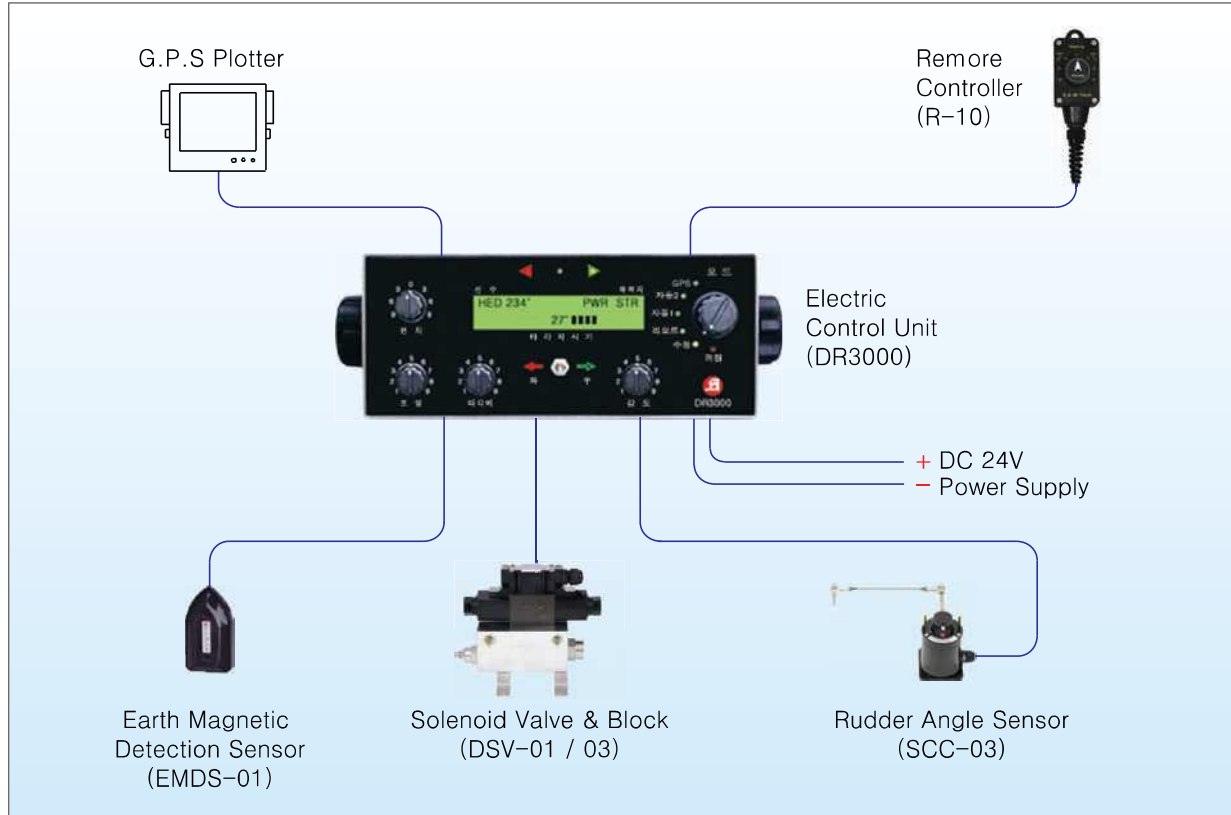




Power Hydraulic Steering System

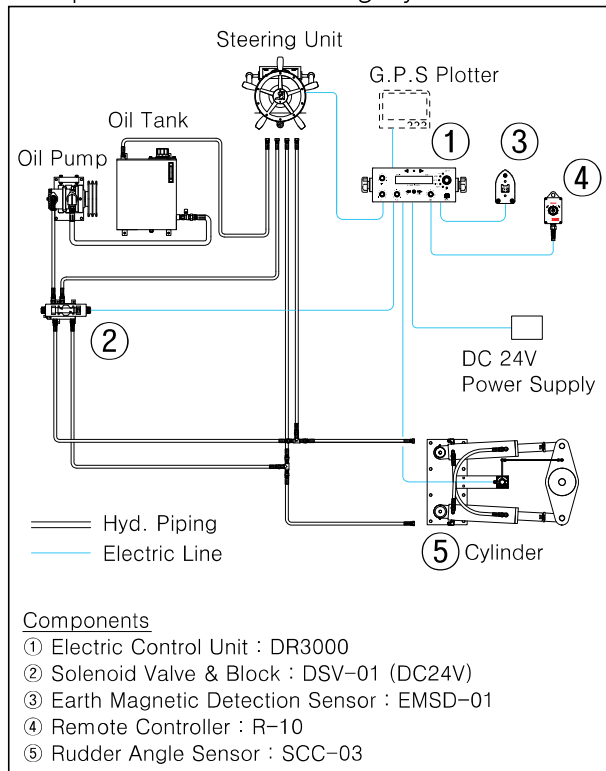
Autopilot

Autopilot

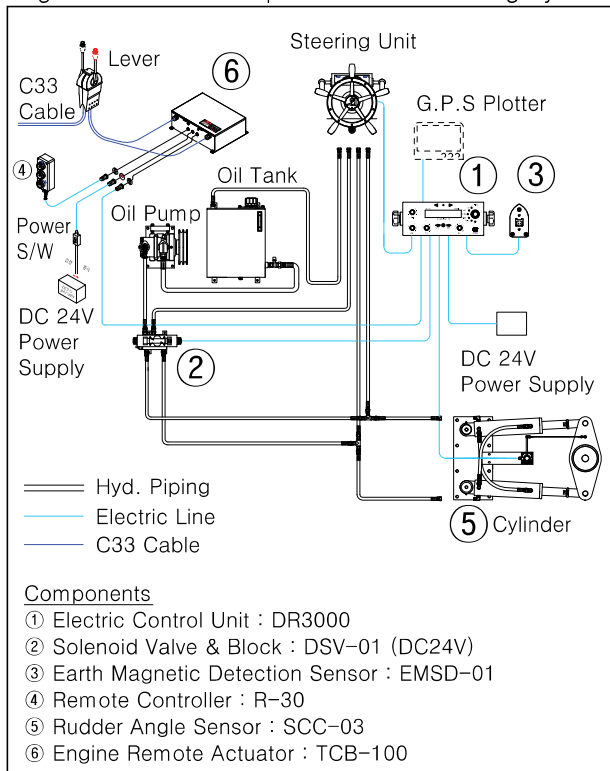


40

Autopilot & Power Steering System



Engine Remote + Autopilot & Power Steering System

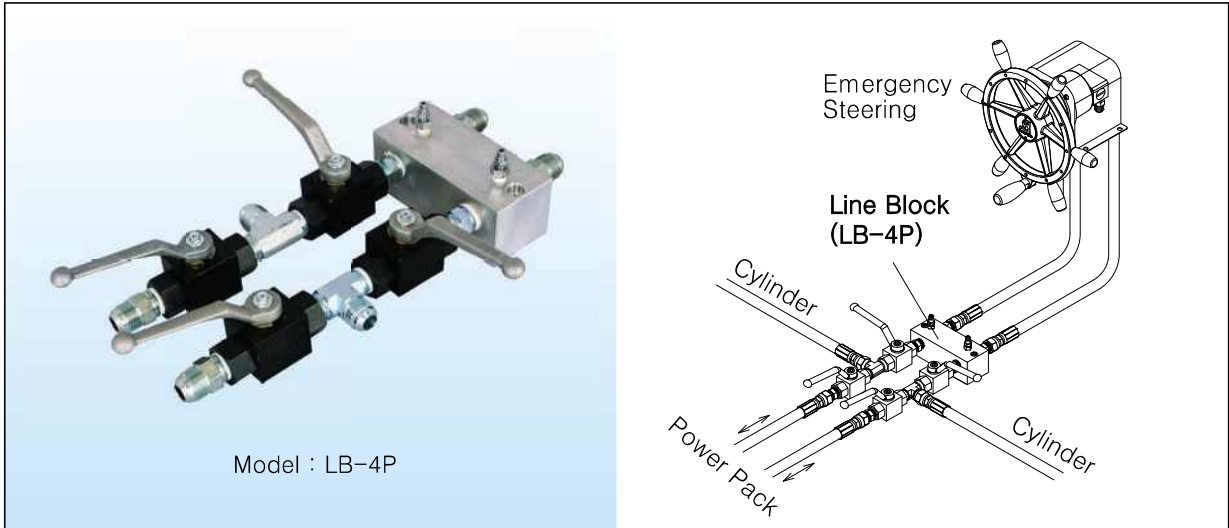




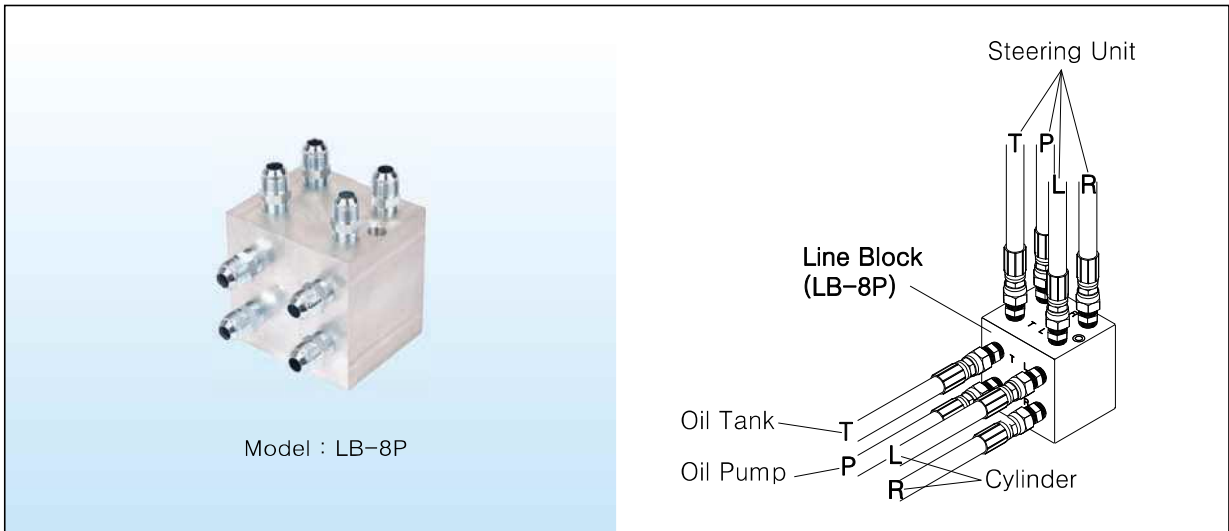
Accessory

Valve

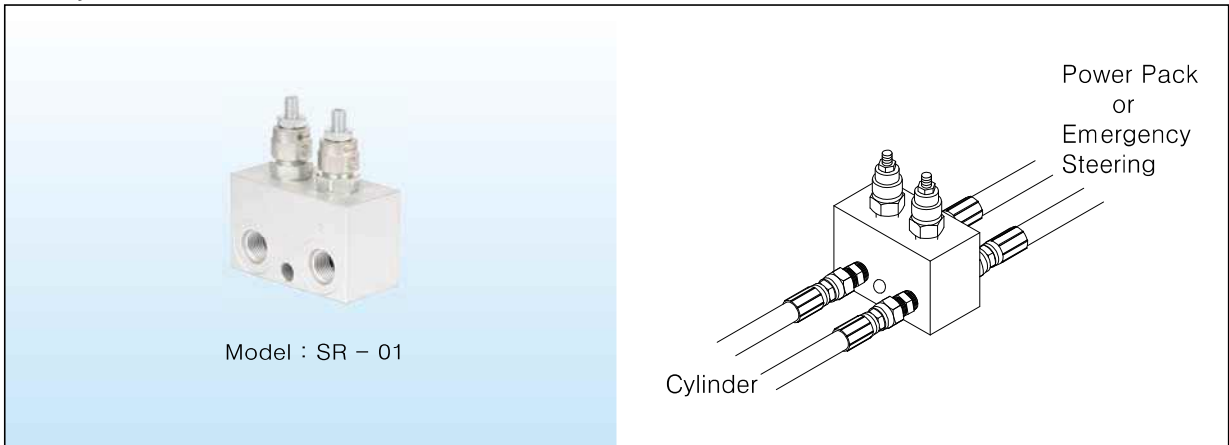
Line Block-4P



Line Block-8P

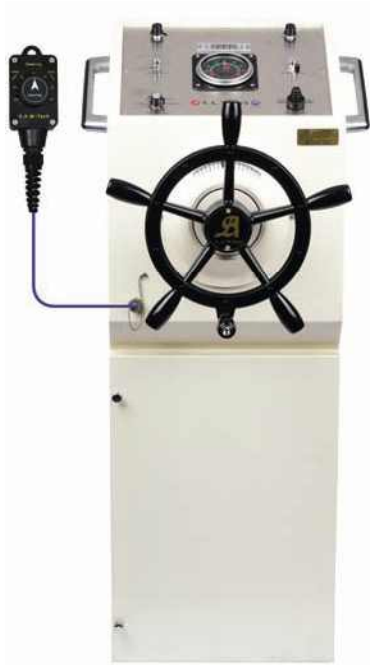


Safely Relief Valve

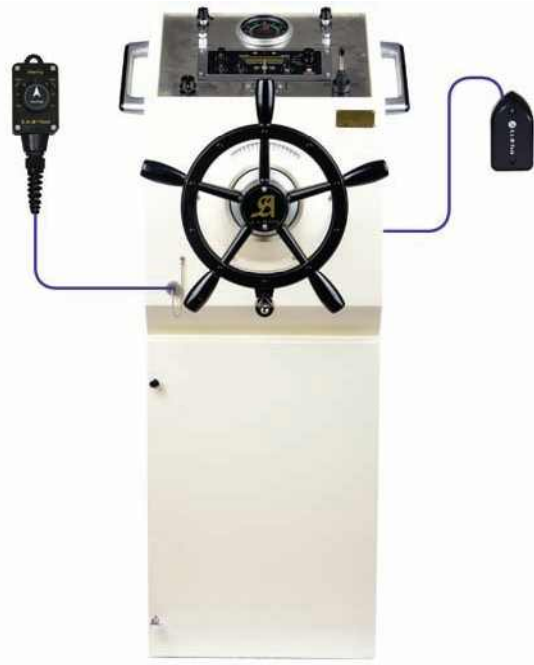




e tri Steering System



ES-03B



EAP-01

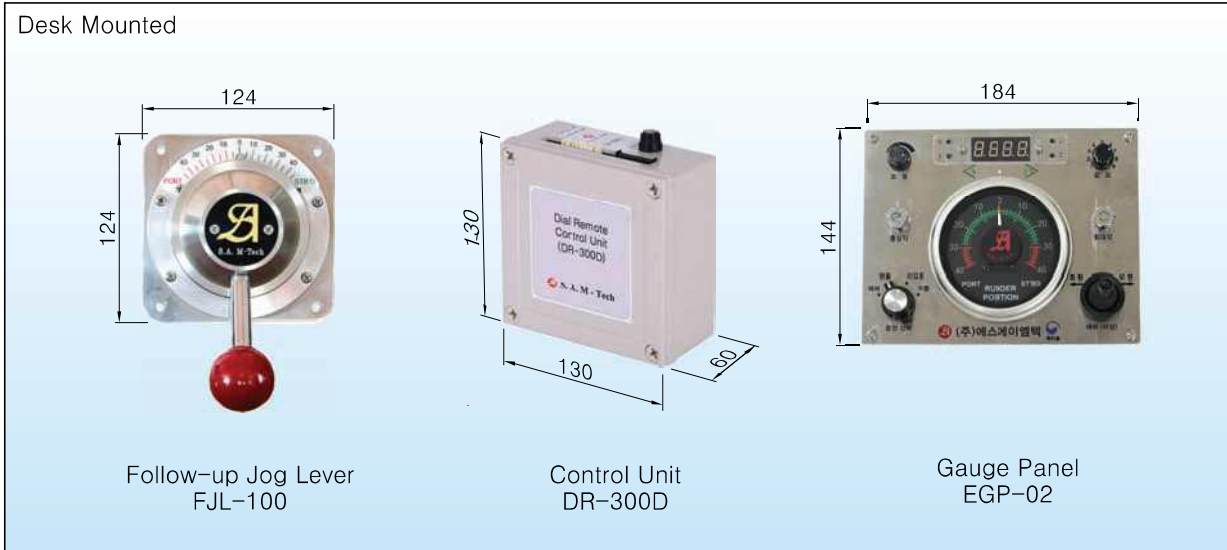


Follow-up Jog Lever Steering (For Wheel House)

Follow-up Jog Lever

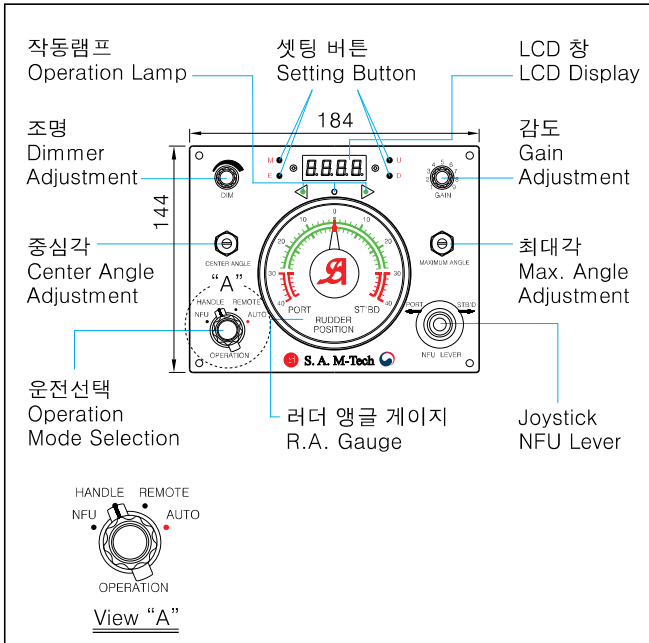
발명특허품 (PATENT)

팔로우-업 조그 레버 구성품 (Follow-up Jog Lever Components)

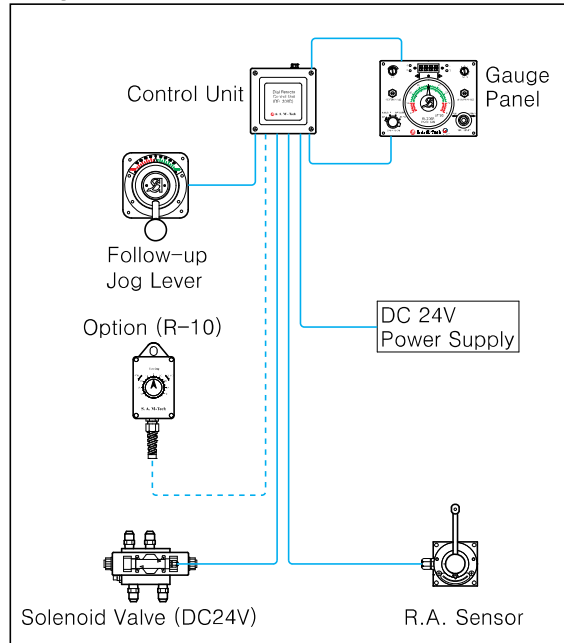


44

Gauge Panel (EGP-02) Each Name



Diagram



Specifications

모델 (Model)	FJC-01
전타 (Turns lock to lock)	1.0 rev (140 deg)
기능 (Function)	<ol style="list-style-type: none"> 1. 조작이 쉬운 조그레버 (Follow-up) (Easy steering of Jog Lever .(Follow-up)) 2. 비상시 NFU (Non Follow-up) 조이스틱으로 조타 가능 (In case of emergency, it can be steered by NFU (Non Follow-up) Joystick. 3. 설치공간에 제약을 받지 않는 분리형 Desk Mount Type타입 (No limitation for install space is guaranteed by separated Desk Mount Type type.)
주요구성품 (Main Component)	1. Follow-up Jog Lever 2. Control Unit 3. Gauge Panel (EGP-02 : 184×144)
중량 (Weight)	3.2 kg

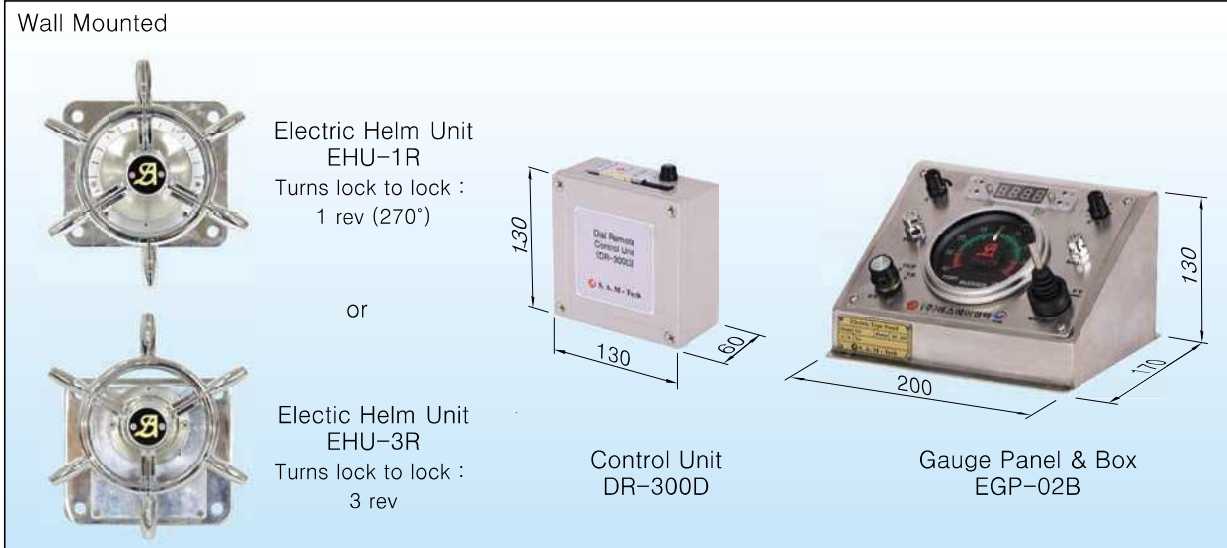


Electric Helm Unit Steering (For Wheel House)

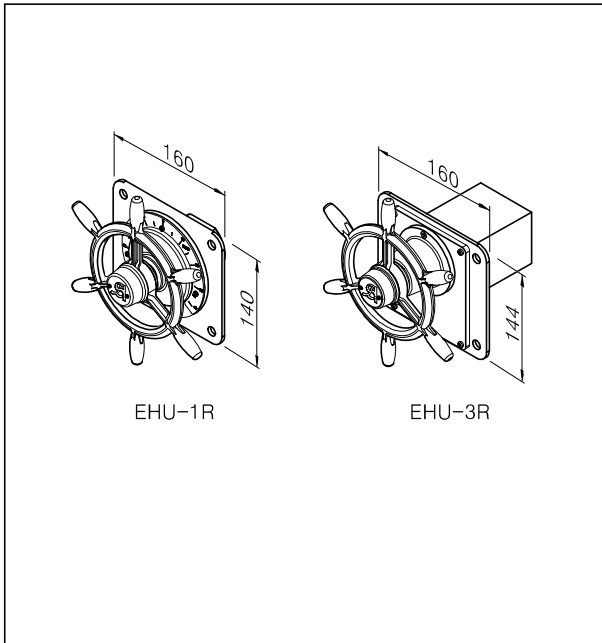
Electric Helm Unit

발명특허품 (PATENT)

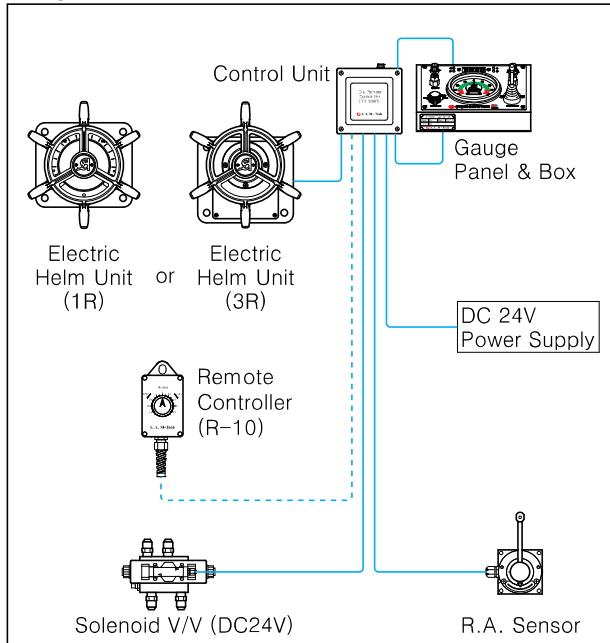
Electric Helm Unit 구성품 (Electric Helm Unit Components)



Dimension



Diagram



Specifications

모델 (Model)	EHC-1R	EHC-3R
전타 (Turns lock to lock)	1.0 rev (270 deg)	3.0 rev
기능 (Function)	1. 조작이 쉬운 일렉트릭 헬름 유닛 (Easy steering of Electric Helm Unit.) 2. 비상시 NFU (Non Follow-up) 조이스틱으로 조타 가능 (In case of emergency, it can be steered by NFU (Non Follow-up) Joystick.) 3. 설치공간에 제약을 받지 않는 분리형 타입 (No limitation for install space is guaranteed by separated type.)	
주요구성품 (Main Component)	1. Helm Unit 2. Control Unit 3. Gauge Panel & Box (EGP-02B : 200×170×130)	
중량 (Weight)	4.6 kg (Total)	5.4 kg (Total)



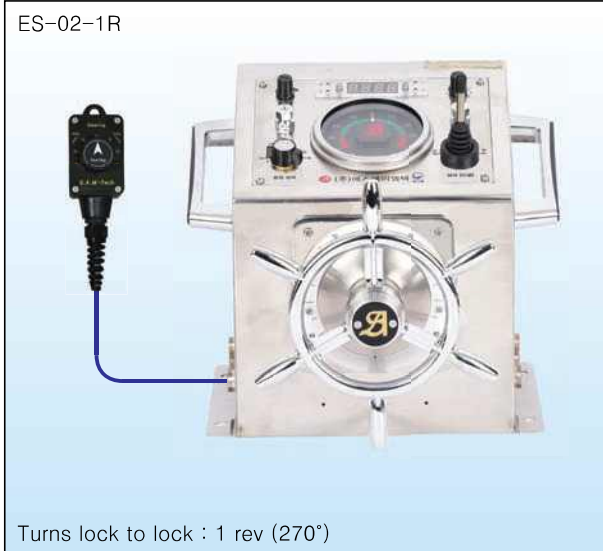
Electric Stand (For Wheel House)

Electric Stand (ES-02-1R, ES-02-3R)

발명특허품 (PATENT)

Electric Stand

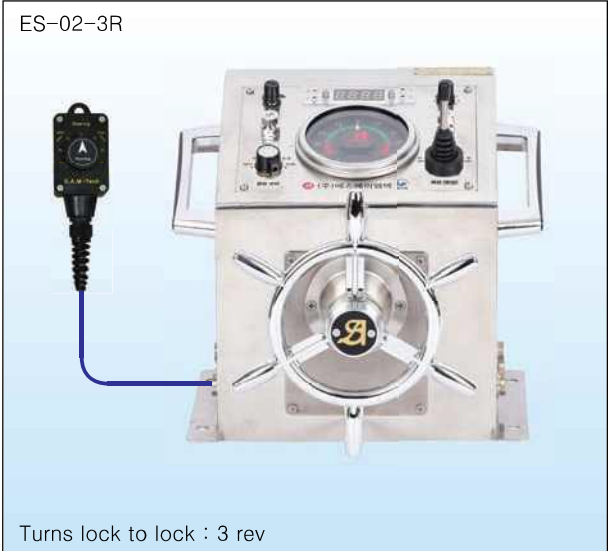
ES-02-1R



Turns lock to lock : 1 rev (270°)

Electric Stand

ES-02-3R

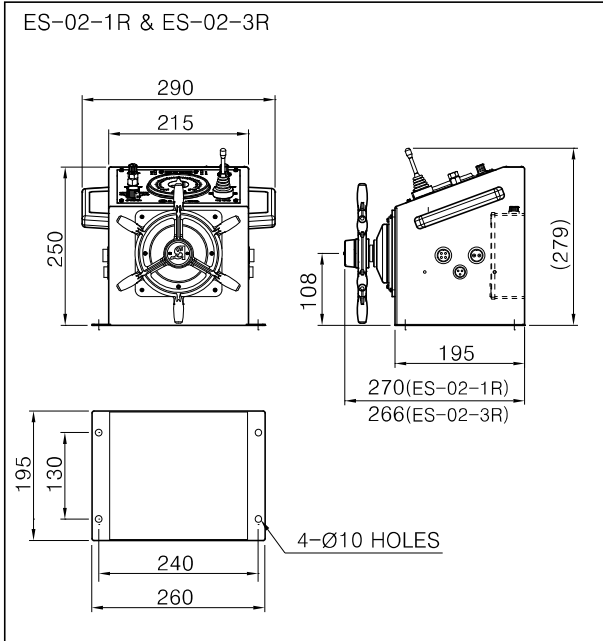


Turns lock to lock : 3 rev

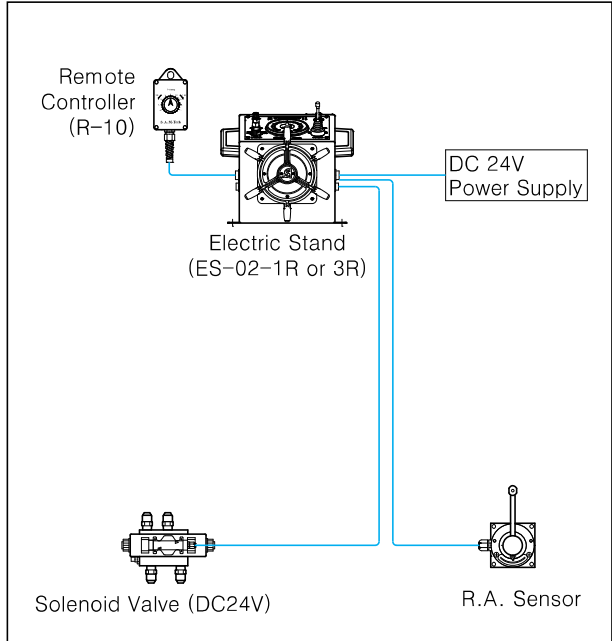
46

Dimension

ES-02-1R & ES-02-3R



Diagram



Specifications

모델 (Model)	ES-02-1R	ES-02-3R
전타 (Turns lock to lock)	1.0 rev (270 deg)	3.0 rev
기능 (Function)	1. 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 2. 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick.) 3. 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House.)	
주요구성품 (Main Component)	1. Desk Stand (with Helm unit) 2. Control Unit 3. Gauge Panel (EGP-02 : 184×144) 4. Dial Remote Controller	
중량 (Weight)	6.1 kg (Only Stand)	6.7 kg (Only Stand)

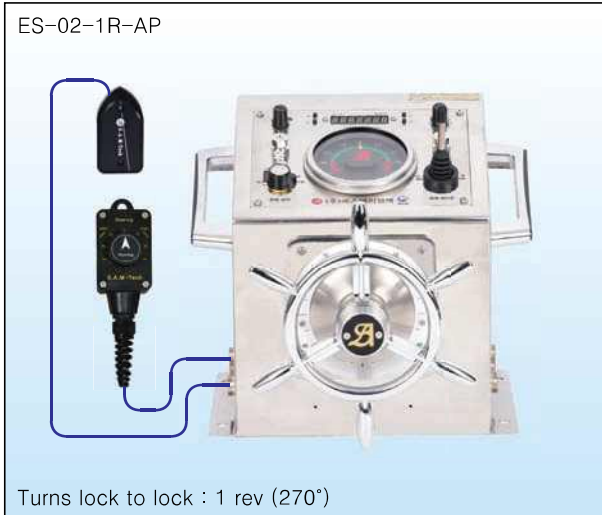


Electric Stand (For Wheel House)

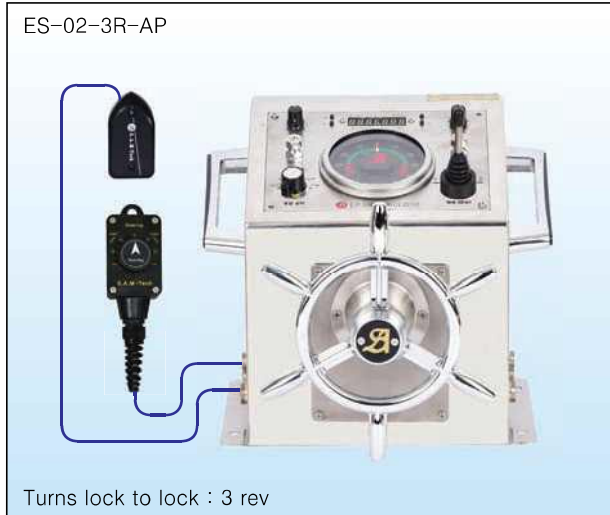
Electric Stand (ES-02-1R-AP, ES-02-3R-AP)

발명특허품 (PATENT)

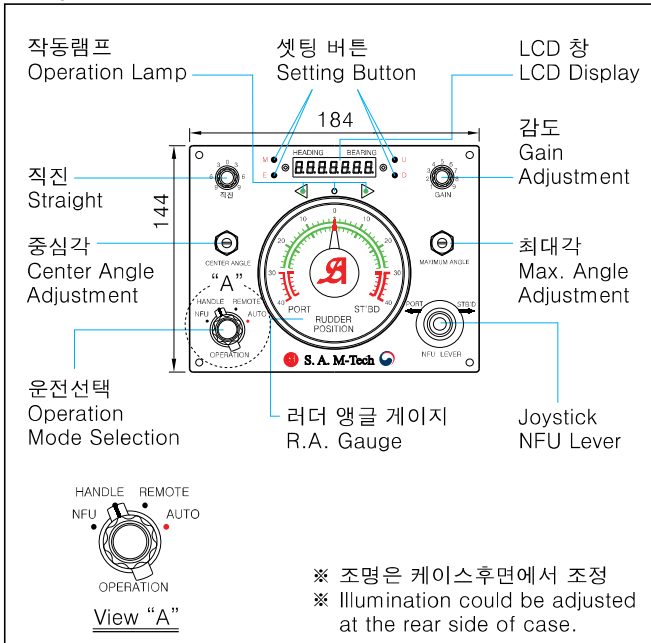
Electric Stand



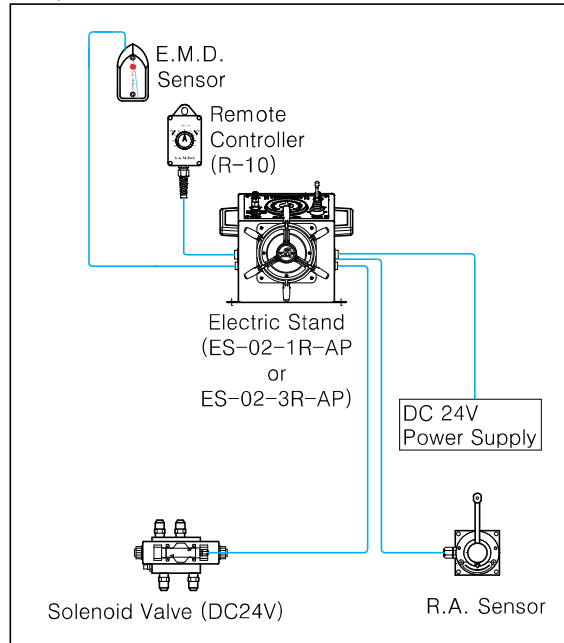
Electric Stand



Gauge Panel (EGP-03) Each Name



Diagram



Specifications

모델 (Model)	ES-02-1R-AP	ES-02-3R-AP
전타 (Turns lock to lock)	1.0 rev (270 deg)	3.0 rev
기능 (Function)	1. 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 2. 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick) 3. 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House.) 4. Auto 선택시 설정각도에서 자동 직진항해 가능 (On Auto position, automatic straight sailing on set angle is possible)	
주요구성품 (Main Component)	1. Desk Stand (with Helm unit) 2. Control Unit 3. Gauge Panel (EGP-03 : 184×144) 4. Dial Remote Controller 5. E.M.D.Sensor	
중량 (Weight)	6.1 kg (Only Stand)	6.7 kg (Only Stand)



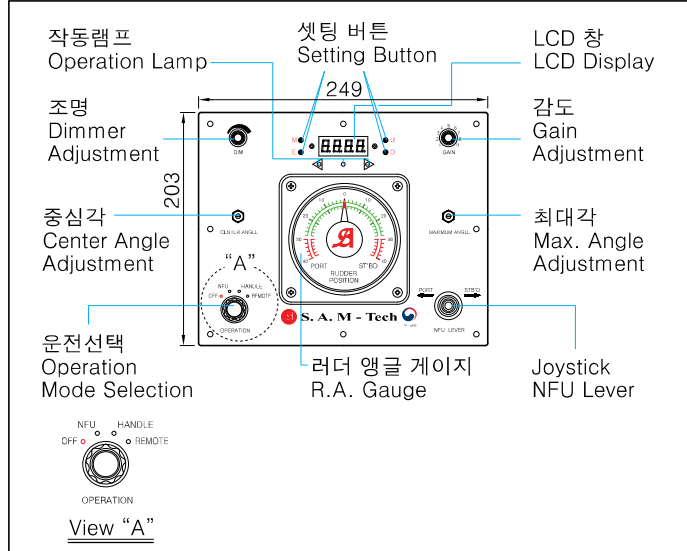
Electric Stand (For Wheel House)

Electric Stand (ES-03M)

Electric Stand

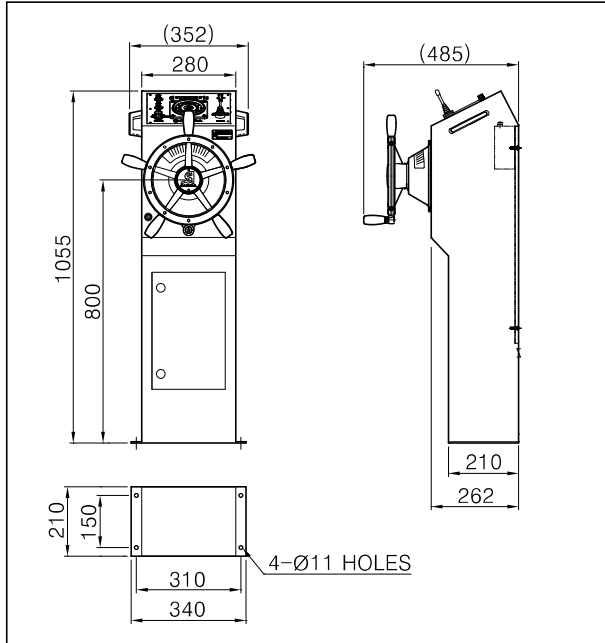


Gauge Panel (EGP-04) Each Name

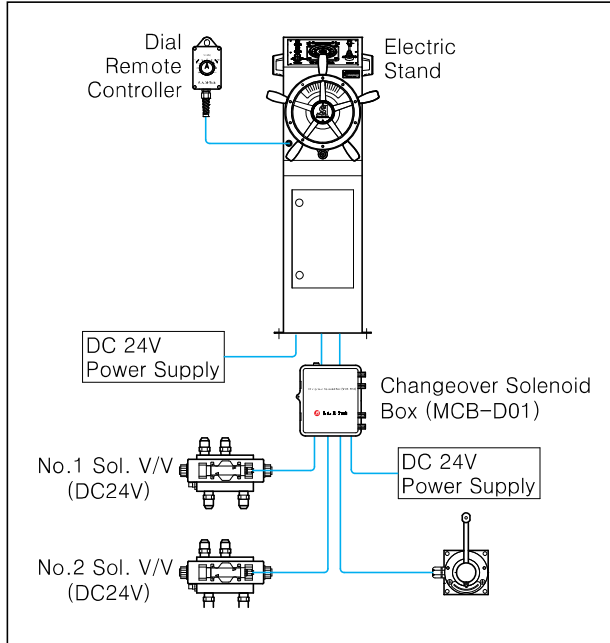


48

Dimension



Diagram



Specifications

모델 (Model)	ES-03M
전타 (Turns lock to lock)	3 rev
기능 (Function)	<ol style="list-style-type: none"> 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick.) 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House.)
주요구성품 (Main Component)	1. Long Stand 2. Control Unit 3. Gauge Panel (EGP-04 : 249×203)
중량 (Weight)	27 kg



Electric Stand (For Wheel House)

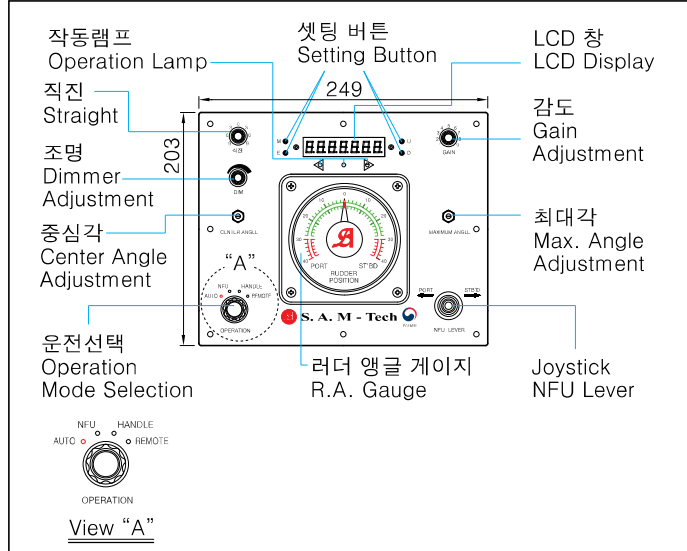
Electric Stand (ES-03M-AP)

Electric Stand

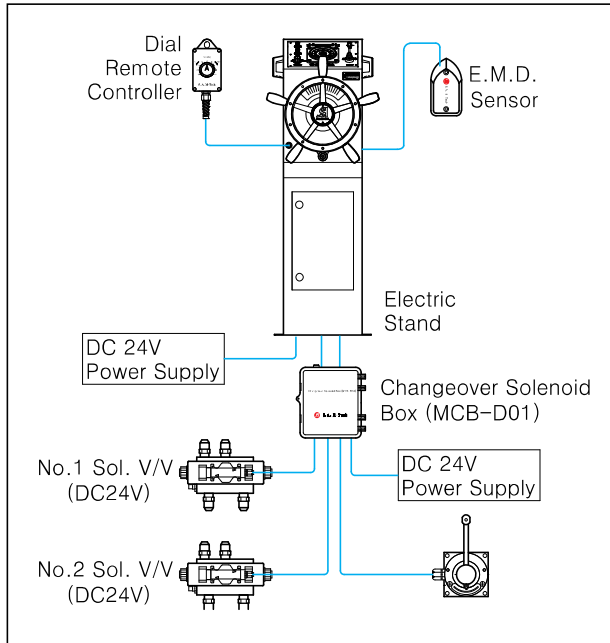
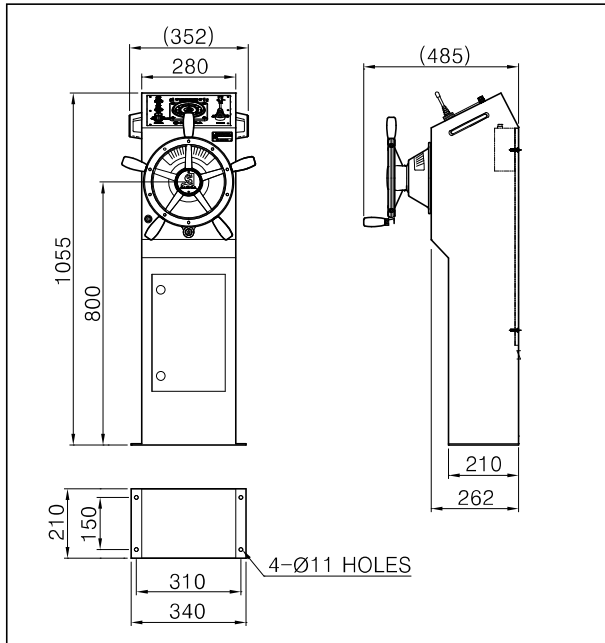
ES-03M-AP



Gauge Panel (EGP-05) Components



Dimension



Specifications

모델 (Model)	ES-03M-AP
전타 (Turns lock to lock)	3 rev
기능 (Function)	<ol style="list-style-type: none"> 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick) 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House) Auto 선택시 설정각도에서 자동 직진항해 가능 (On Auto position, automatic straight sailing on set angle is possible)
주요구성품 (Main Component)	<ol style="list-style-type: none"> Long Stand Control Unit Gauge Panel (EGP-05 : 249×203) Dial Remote Controller E.M.D Sensor
중량 (Weight)	27 kg

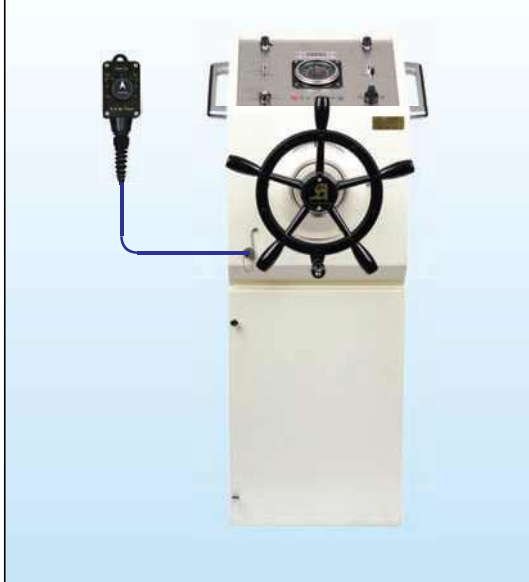


Electric Stand (For Wheel House)

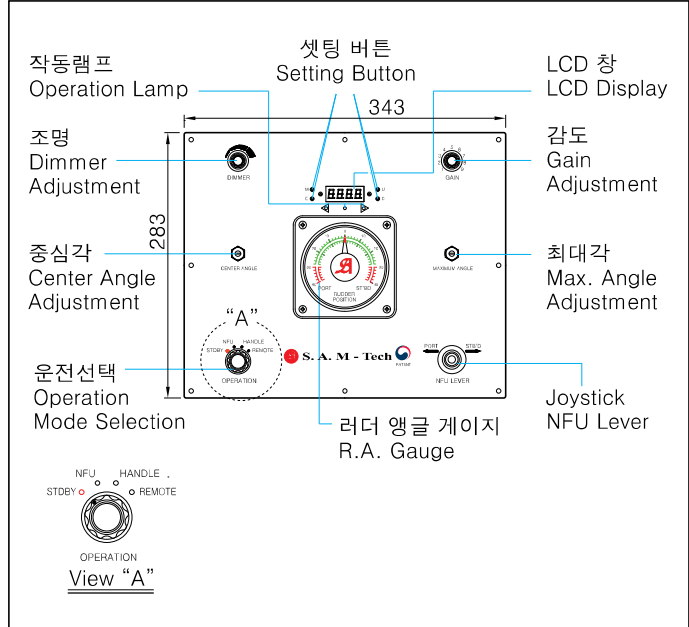
Electric Stand (ES-03B)

Electric Stand

ES-03B

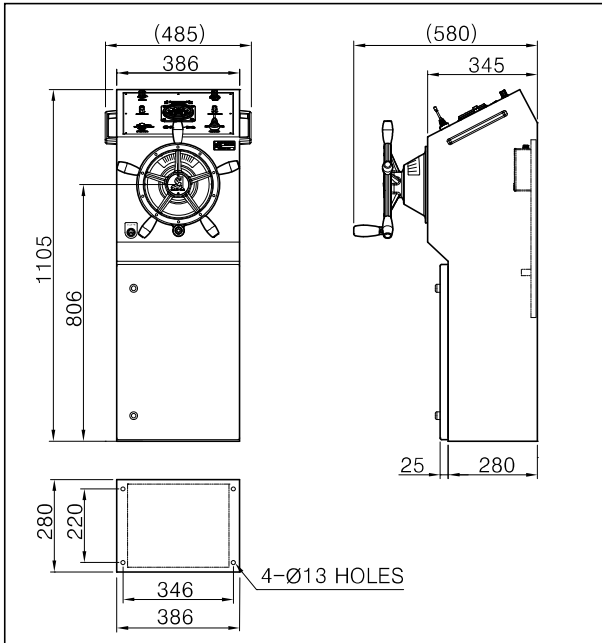


Gauge Panel (EGP-06) Components

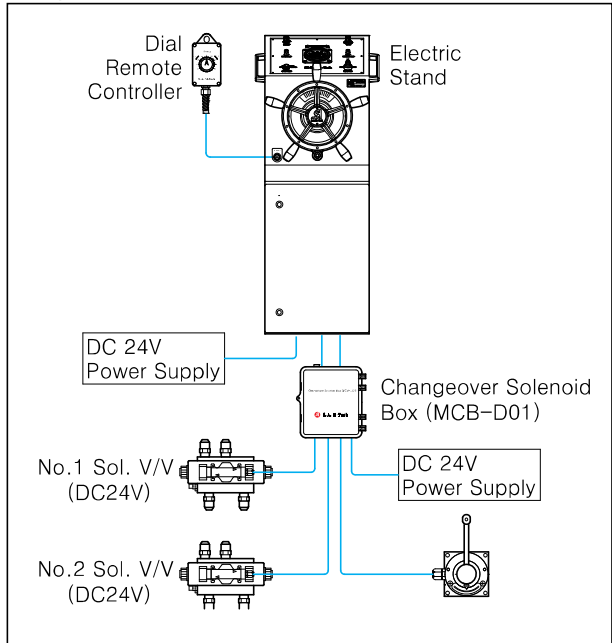


50

Dimension



Diagram



Specifications

모델 (Model)	ES-03B
전타 (Turns lock to lock)	3 rev
기능 (Function)	1. 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 2. 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick) 3. 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House)
주요구성품 (Main Component)	1. Long Stand 2. Control Unit 3. Gauge Panel (EGP-06 : 343×283) 4. Dial Remote Controller
중량 (Weight)	38 kg



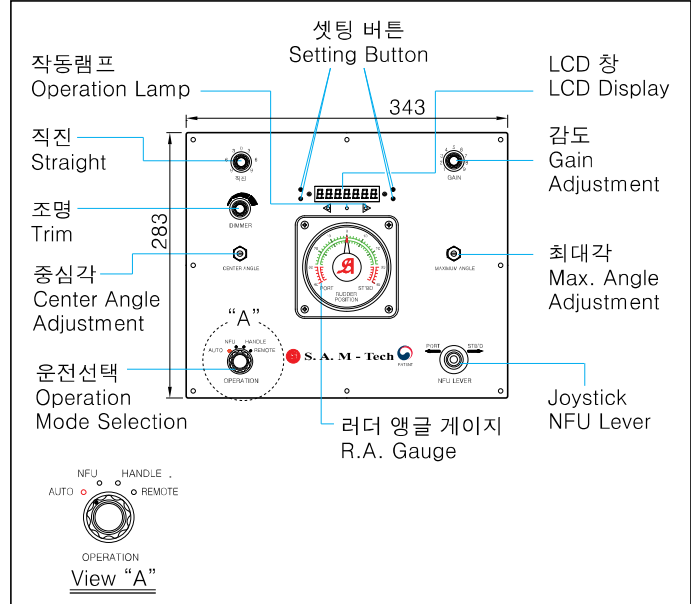
Electric Stand (For Wheel House)

Electric Stand (ES-03B-AP)

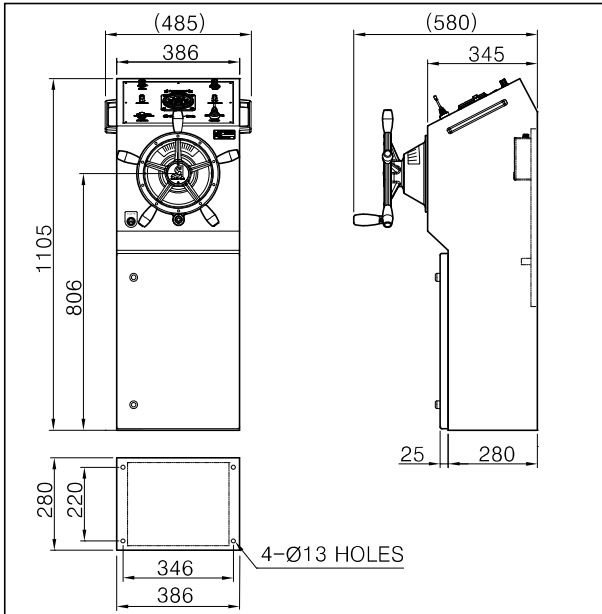
Electric Stand



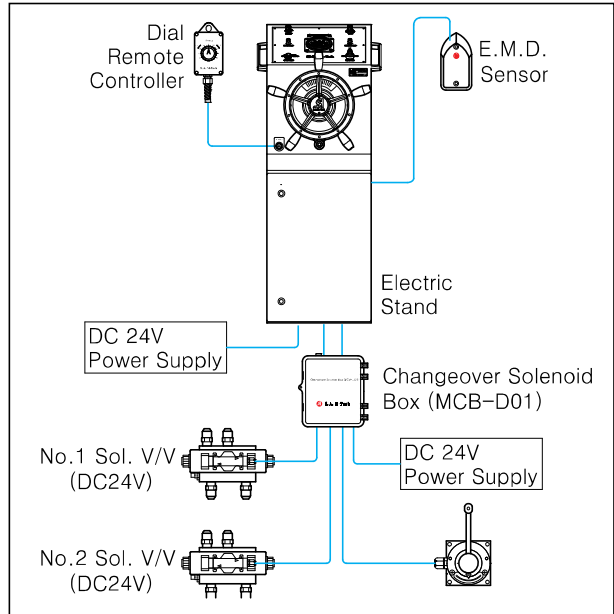
Gauge Panel (EGP-07) Components



Dimension



Diagram



Specifications

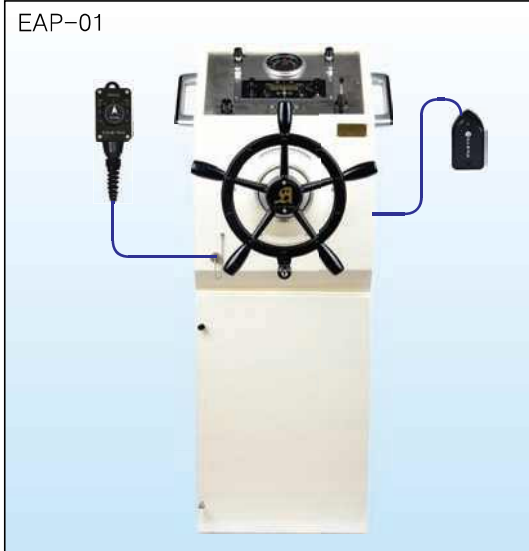
모델 (Model)	ES-03B-AP
전타 (Turns lock to lock)	3 rev
기능 (Function)	<ol style="list-style-type: none"> 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick) 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House) Auto 선택시 설정각도에서 자동 직진항해 가능 (On Auto position, automatic straight sailing on set angle is possible)
주요구성품 (Main Component)	<ol style="list-style-type: none"> Long Stand Control Unit Gauge Panel (EGP-07 : 343×283) Dial Remote Controller E.M.D Sensor
중량 (Weight)	38 kg



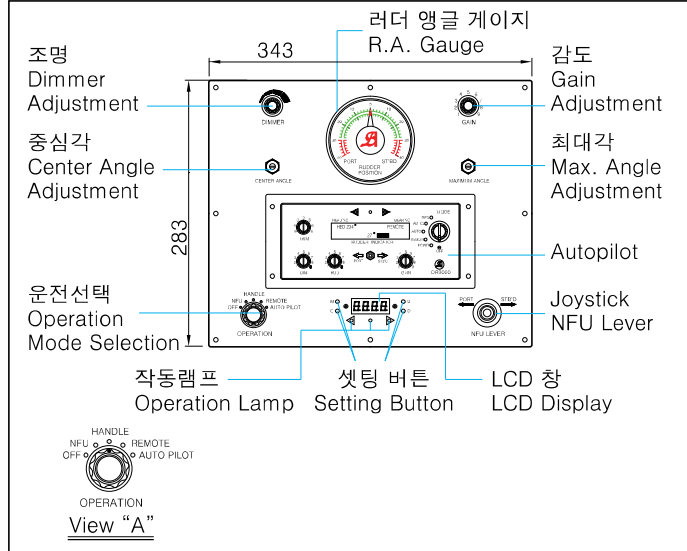
Electric Stand (For Wheel House)

Autopilot Stand (EAP-01)

Autopilot Stand

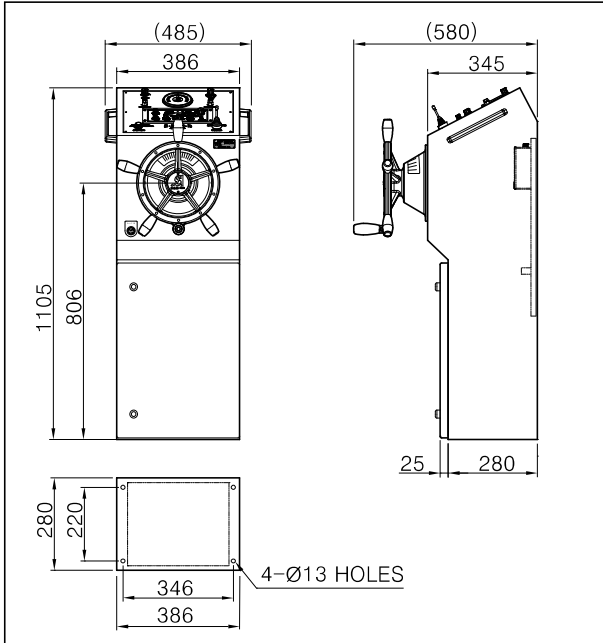


Gauge Panel (EGP-08) Components

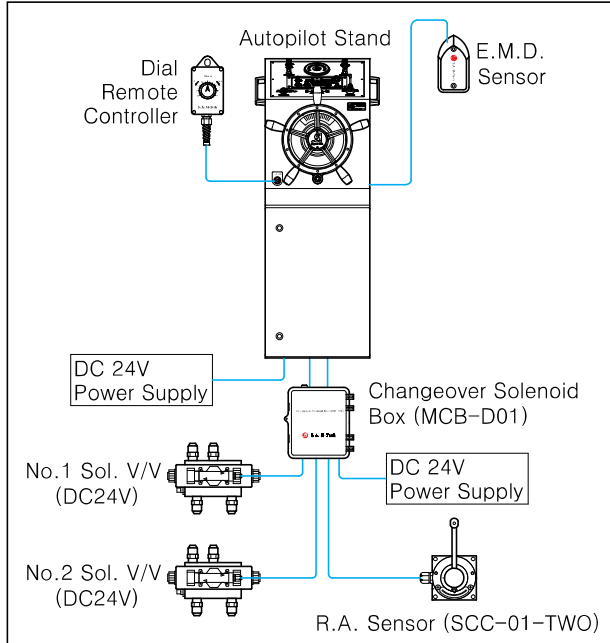


52

Dimension



Diagram



Specifications

모델 (Model)	EAP-01
전타 (Turns lock to lock)	3 rev
기능 (Function)	1. 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 2. 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick) 3. 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House) 4. Autopilot 일체형
주요구성품 (Main Component)	1. Long Stand 2. Control Unit 3. Gauge Panel (EGP-08 : 383×283) 4. AutoPilot 5. Dial Remote Controller 6. E.M.D Sensor
중량 (Weight)	39 kg



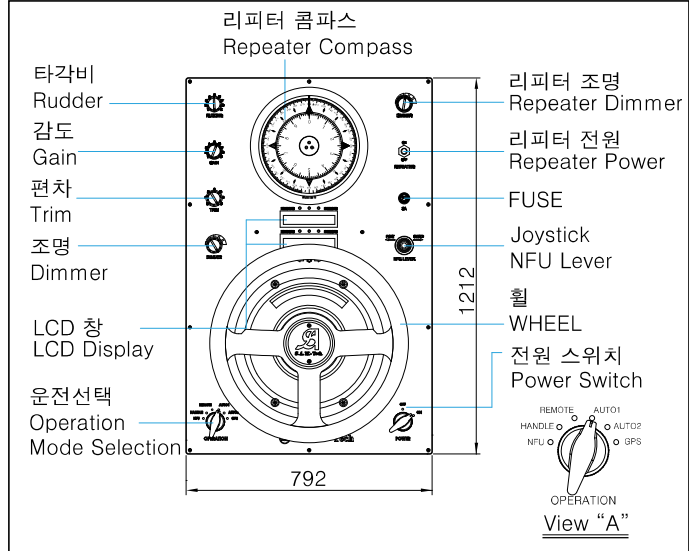
Electric Stand (For Wheel House)

Autopilot Stand (AG-1000)

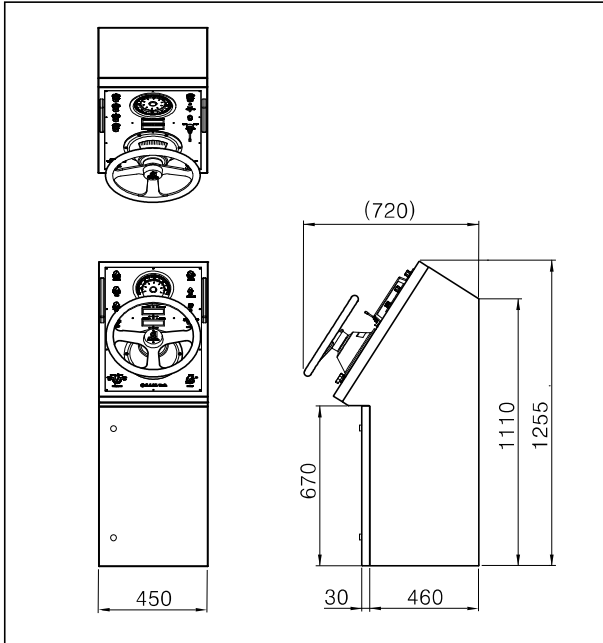
Autopilot Stand



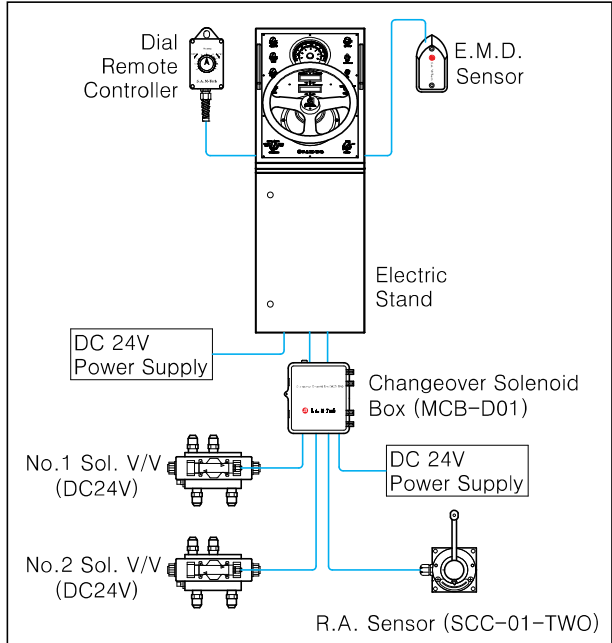
Gauge Panel (EGP-09) Components



Dimension



Diagram



Specifications

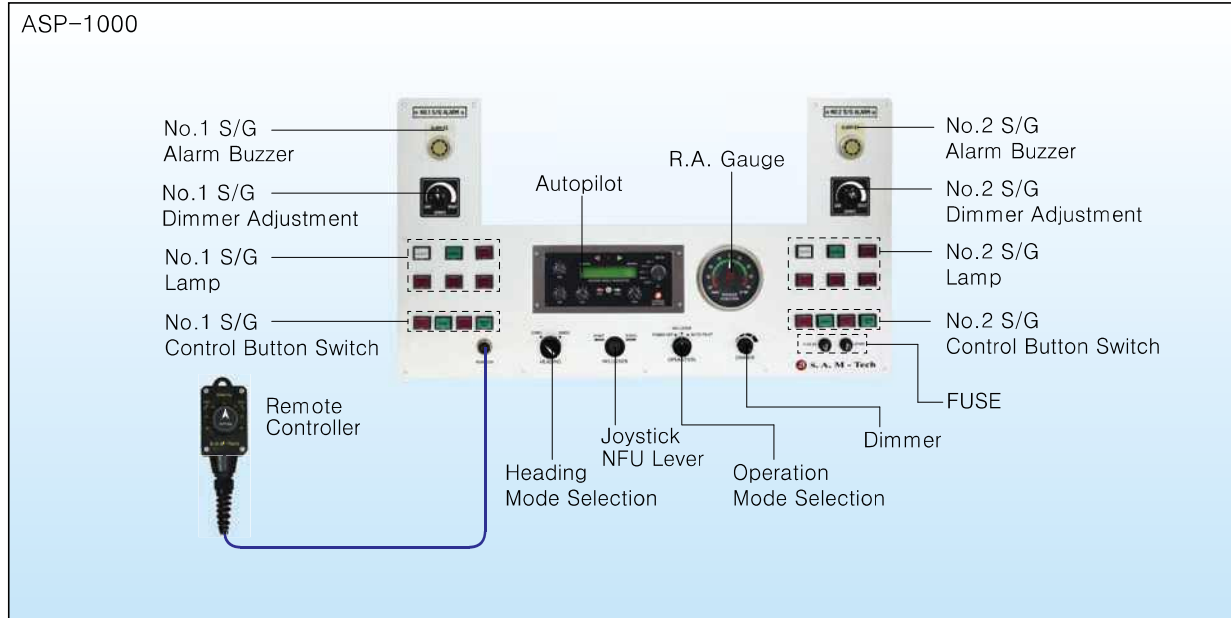
모델 (Model)	AG-1000
전타 (Turns lock to lock)	3 rev
기능 (Function)	<ol style="list-style-type: none"> 손가락으로 가볍게 핸들 조타 (Easy Handle Steering with finger) 비상시 조이스틱으로 조타 가능 (In case of emergency, it can be steered by Joystick) 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House) AutoPilot 일체형 리피터 콤파스 내장되어 항해 선수각 확인 가능 및 추가로 자이로 콤파스 연결 가능
주요구성품 (Main Component)	1. Long Stand 2. Control Unit 3. Gauge Panel (EGP-09 : 792×1212) 4. AutoPilot 5. Dial Remote Controller 6. E.M.D Sensor 7. Reapter
중량 (Weight)	58 kg



Electric Stand (For Wheel House)

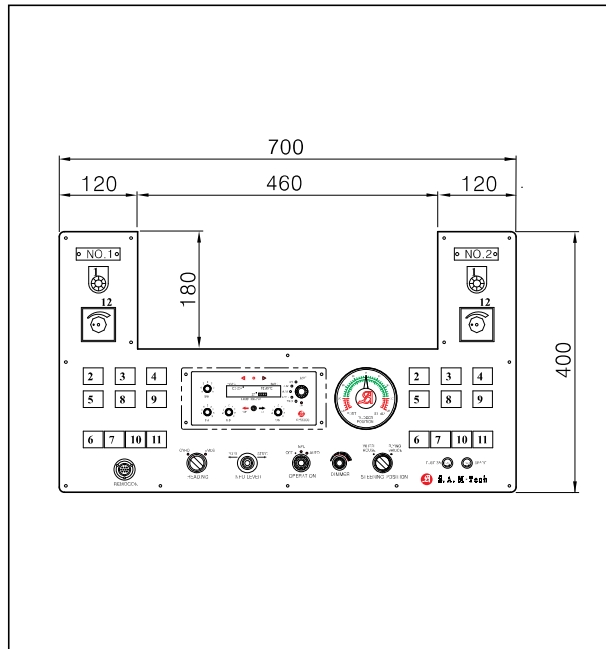
Autopilot Steering Panel (ASP-1000)

Autopilot Steering Panel (ASP-1000) Components

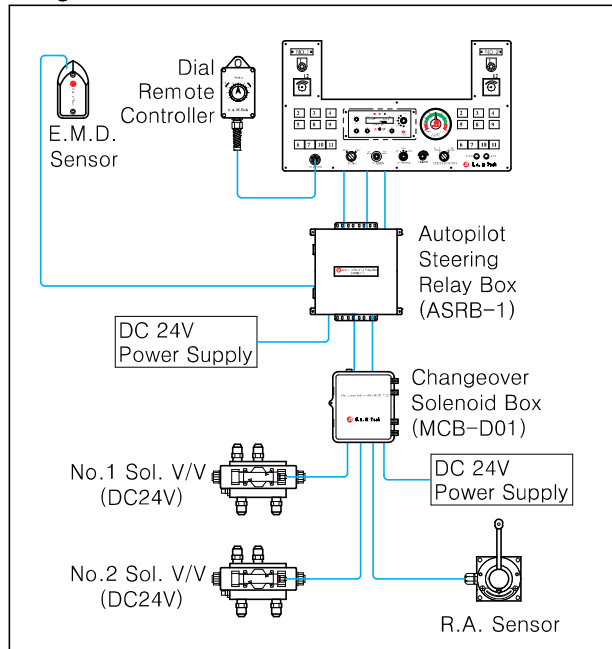


54

Dimension



Diagram



Specifications

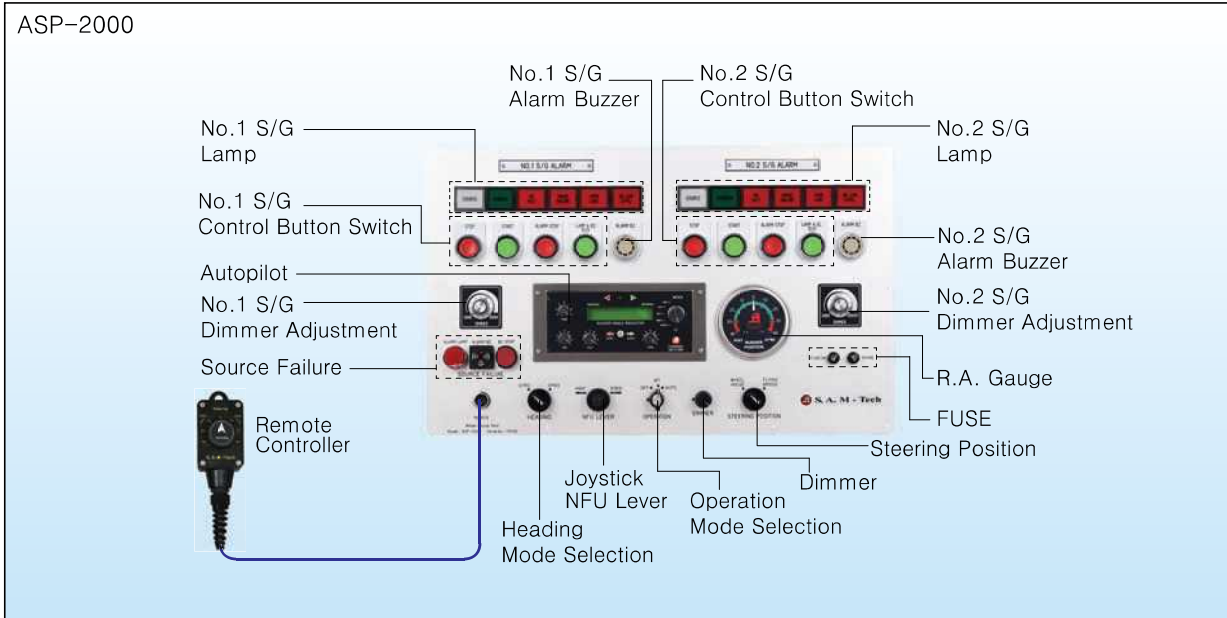
모델 (Model)	ASP-1000
전타 (Turns lock to lock)	NFU (65 deg / 28sec)
기능 (Function)	<ol style="list-style-type: none"> 1. NFU 조타 (NFU Steering) 2. Autopilot 일체형 및 알람 패널 일체형 (Autopilot and Alarm Panel built-in type) 3. 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House)
주요구성품 (Main Component)	<ol style="list-style-type: none"> 1. Autopilot Steering Panel (ASP-1000) : Autopilot & Alarm Panel 2. Dial Remote Controller 3. E.M.D Sensor 4. ASRB-1
중량 (Weight)	7.7 kg



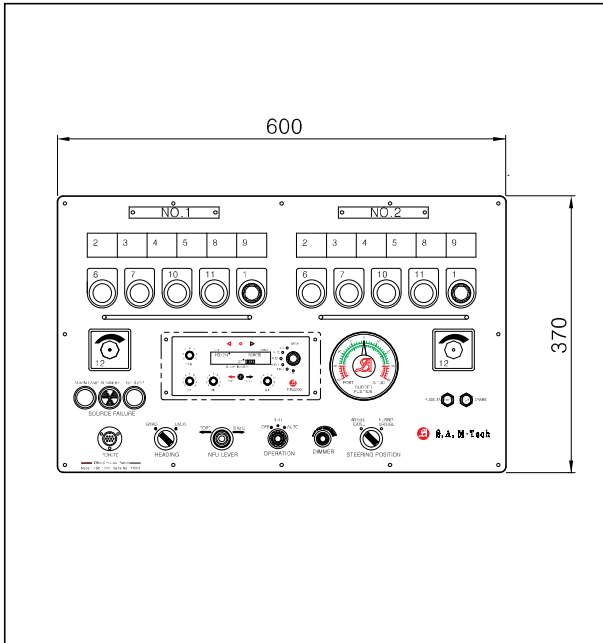
Electric Stand (For Wheel House)

Autopilot Steering Panel (ASP-2000)

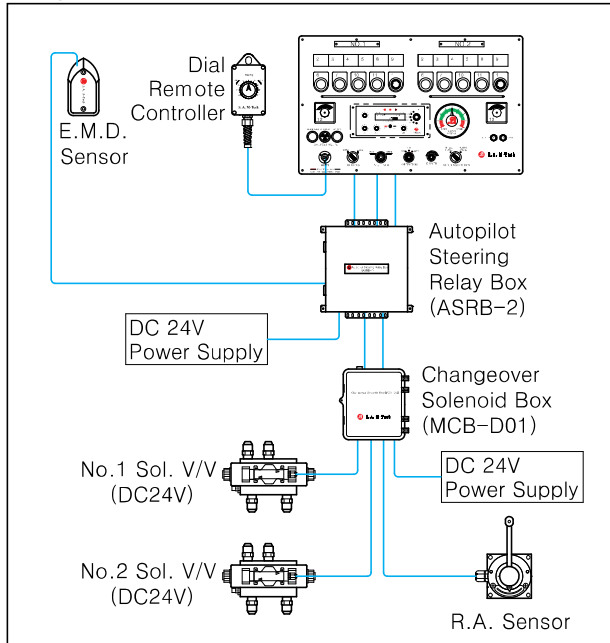
Autopilot Steering Panel (ASP-2000) Components



Dimension



Diagram



Specifications

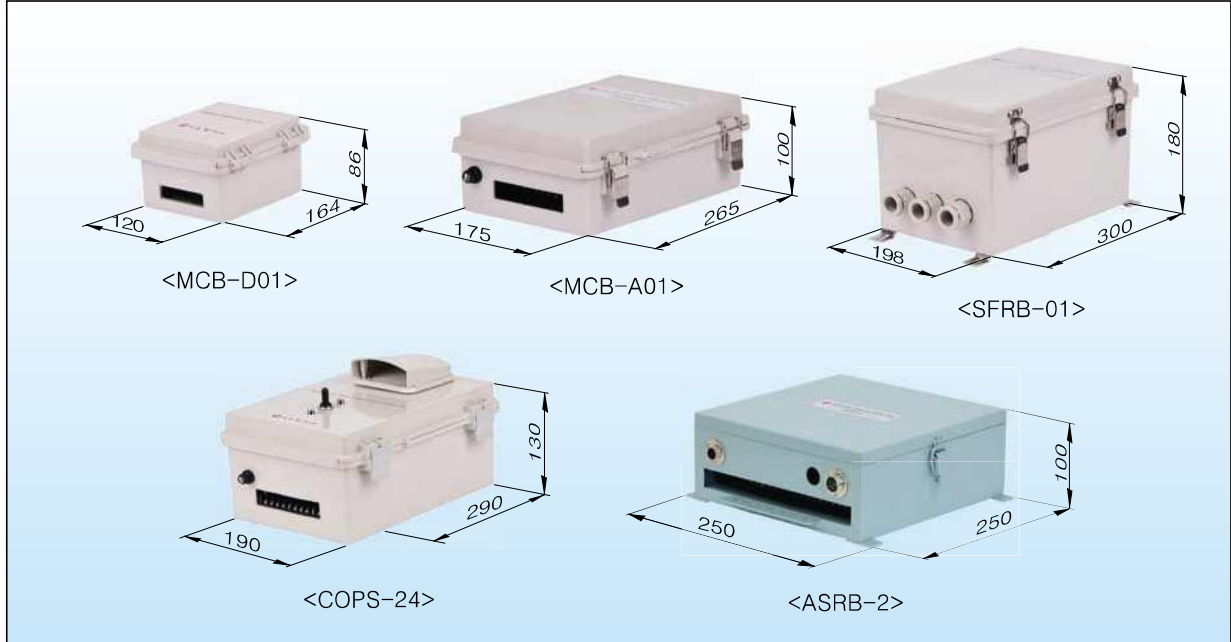
모델 (Model)	ASP-2000
전타 (Turns lock to lock)	NFU (65 deg / 28sec)
기능 (Function)	<ol style="list-style-type: none"> 1. NFU 조타 (NFU Steering) 2. Autopilot 일체형 및 알람 패널 일체형 (Autopilot and Alarm Panel built-in type) 3. 조타실 밖에서는 리모콘으로 조타 (Steering by Remote Controller outside from Wheel House)
주요구성품 (Main Component)	<ol style="list-style-type: none"> 1. Autopilot Steering Panel (ASP-2000) : Autopilot & Alarm Panel 2. Dial Remote Controller 3. E.M.D Sensor 4. ASRB-2
중량 (Weight)	7.7 kg



Control Box

MCB-D01, MCB-A01, SFRB-01, COPS-24, ASRB-02

Control Box



56

Dimension

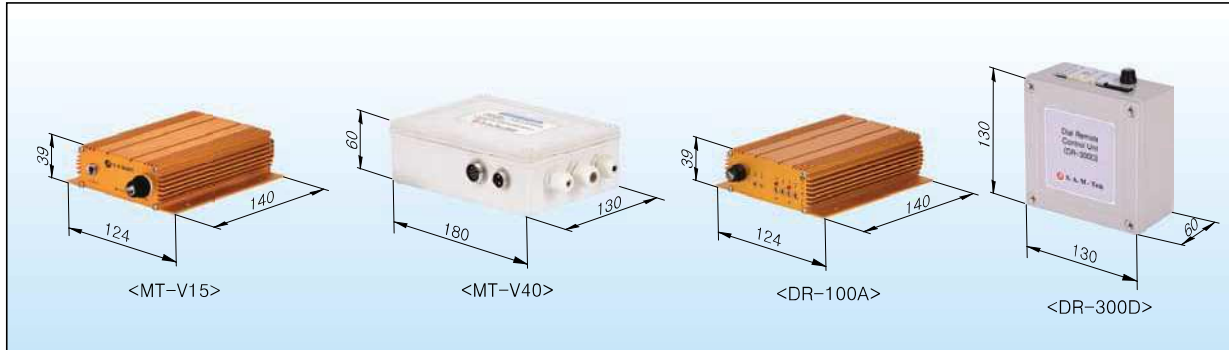
Model	Power Source	Fuse	Size (mm) (L)×(W)×(H)	Weight (kg)	Use
MCB-D01	DC 24V	10 A	164×120×86	0.5	스티어링 기어 룸에서 스타터 패널 선택에 의하여 No.1 & No.2 솔레노이드가 선택되어 조타를 할 수 있는 박스. (DC 24V용) (At the steering gear room, this box can choose No.1 & No.2 Solenoid by starter panel for steering.) (DC 24V)
MCB-A01	DC 24V AC 100V AC 220V	3 A	265×175×100	1.7	스티어링 기어 룸에서 스타터 패널 선택에 의하여 No.1 & No.2 솔레노이드가 선택되어 조타를 할 수 있는 박스. (AC 110V, 220V용) (At the steering gear room, this box can choose No.1 & No.2 Solenoid by starter panel for steering.) (AC 110V, 220V)
SFRB-01	DC 24V AC 220V	2 A	300×198×180	2.4	선박에서 휠 하우스로 오는 AC 전원 및 DC 전원이 단락이 되었을 때 휠 하우스에서 램프 및 부저로 알 수 있도록 회로가 내장된 박스. (This box alarm by lamp and buzzer when AC or DC power from the ship to the wheelhouse is cutoff.)
COPS-24	AC 220V	7 A	290×190×130	2.8	상용 공급전원 AC220V를 DC24V(14.6A)로 변환 시켜 주는 모듈형의 전원 공급장치가 내장되어 안정된 직류 전압을 공급하는 박스. (This box supplies stable DC power by built-in module power supply unit which converts AC220V Power to DC 24V-14.6A)
ASRB-2	DC 24V	-	250×250×100	3.8	오토파일럿 스티어링 패널, 플라잉 브릿지 패널과 EMDS, 외부게이지, 자이로 콤파스, G.P.S. 플로터 등의 신호를 결선하기 위한 릴레이 박스. (This Relay Box is used for connecting the signal from Autopilot Steering Panel, Flying Bridge Panel, EMDS, External Gauge, Gyro Compass, G.P.S Plotter and others.)



Control Unit

MT-V15, MT-V40, DR-100A, DR-300D

Control Unit



Dimension

Model	Power Source	Fuse	Size (mm) (L)×(W)×(H)	Weight (kg)	Use
MT-V15	DC 24V	15 A	140×124×39	0.5	<ol style="list-style-type: none"> MRD 스탠드, MRP-J & MRP-D에 적용 (Applied on MRD Stand, MRP-J & MRP-D.) 컨트롤 유닛에 모터의 전원을 연결하여 모터의 좌, 우회전을 제어하여 조이스틱 리모콘으로 조작이 가능한 컨트롤 유닛. (This control unit is connected to Motor's Power so that control motor's rotation direction(left, right), It also could be controlled by Joystick.)
MT-V40	DC 24V	30 A	180×130×60	0.6	<ol style="list-style-type: none"> HRP-75H에 적용(Applied on HRP-75H) 컨트롤 유닛에 모터의 전원을 연결하여 모터의 좌, 우회전을 제어하고, 유압라인의 과부하 차단장치 장착으로 모터 및 기판의 손상을 방지하고, 조이스틱 리모콘으로 조작이 가능한 컨트롤 유닛. (This control unit is connected to Motor's Power so that control motor's rotation direction(left, right), and prevent damage to motor and P.C.B board by attached overload cutouts. It also could be controlled by joystick.)
DR-100A	DC 24V	3 A	140×124×39	0.5	<ol style="list-style-type: none"> 다이얼 리모트 컨트롤러 (R10, R-30)에 적용 (Applied on Dial Remote Controller R-10, R-30) 조이스틱 리모콘으로 조작이 구성된 곳에 MRD 및 PR-200D용으로 센서와 연동하여 다이얼 리모콘(5kΩ)으로 솔레노이드 밸브를 구동하는 기판 (It is control unit which operates solenoid valve by dial remote for MRD and PR-200D at the place composed for joystick remote control by interlocked with sensor.)
DR-300D	DC 24V	5 A	130×130×60	0.4	<ol style="list-style-type: none"> 전기 스탠드 (ES-02, ES-03)에 적용 (Applied on Electric Stand ES-02, ES-03.) 팔로우 업 (헬름 유닛 - 5kΩ)으로 센서와 연동하여 솔레노이드 밸브를 구동하는 기판.(Follow up (HelmUnit - 5kΩ) is interlocked with sensor to operate solenoid valve.) NFU, HANDLE, REMOTE MODE가 구분해서 동작가능 (The operation is possible as divided function NFU, HANDLE, and REMOTE MODE.)



품질은 최고로 고객은 제일로
The best quality and the best service
for the customers



www.samartkr.com



주식
회사 **에스에이엠텍**

본사 : 인천광역시 남동구 청능대로 236,
남동공단 2단지 80BL-15LT
TEL : 032)815-6314 (대표)
FAX : 032)815-6316
E-mail : samt @ samartkr.com



S. A. M-Tech
Ship Accessories & Marine Technology

Head Office : 80BL-15LT, Namdong Industrial Zone,
236, Cheongneung-daero, Namdong-gu,
Incheon, Korea
TEL : ++82-32-815-6314
FAX : ++82-32-815-6316
E-mail : saminfo @ samartkr.com

※모든 사양은 제품 품질향상 및 고객의 요구에 따라서 변경 될 수 있음.

※The specification of the products from this catalog could be changed upon Quality Development and Customer Requirement.

18.04