



An amphibious excavator is specifically designed to manoeuvre in marshes, swampy area and soft terrain with the ability to float on water as an added safety feature. Thanks to the patented **'multi-synchronous hydraulic motor direct drive'** system, the pivotal technology that positions us at the forefront of amphibious excavator design. The paradigm shift in how modern amphibious machine is being designed has won over the heart of numerous customers, both new and experienced amphibious excavator users in the industry.

The amphibious excavator is completely self-propelled, it can access virtually any soft terrains where standard excavator fear most.



Standard excavator sunken into swamp

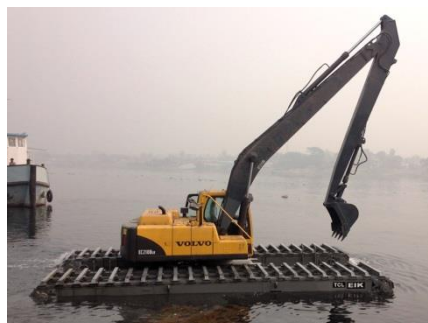
Such machine has proven itself over and over again and has performed exceedingly well in the followings

applications:

- Dredging
- Landscaping
- Erosion control and prevention
- Deepening of waterways and river deltas
- Maintenance and cleaning of rivers, lakes, shorelines, ponds, etc

In the 2013 flood prevention initiative of Indonesia, EIK amphibious excavator has been the star performer of this high profile project in which the machine played a pivoting role in cleaning and clearing of garbage clogged the Jakarta city reservoir and water canals.

Similar machines have also helped the Water Development Board of Bangladesh in dredging, deepening and ongoing maintenance of the country's main water channel.





Case Study:

Major flooding in the Indonesian capital of Jakarta is not uncommon. The most recent one happened in January 2013 to heavy rains and waterways clogged with garbage and other kinds of debris. A 30m long section of the West Flood Canal dike on Jalan Johannes Latuharhary in Menteng collapsed and caused flooding in nearby areas. Millions of people were affected, resulting in serious economic lost to the country. The government was urgently seeking ways to prevent such disastrous occurrence.

EIK Engineering and its Indonesian partner proposed to the government the use of amphibious excavators to clean up the canals. This concept has proved to be effective in the Southeast Asia region. The Pluit area was said to have encountered more severe flooding, as the canals and reservoirs had high sediment of garbage and aquatic plant - this made reservoirs unable to store

the excess water, and the canals could not drain it properly either. EIK's amphibious undercarriage design features the multi-synchronous drive system, which provides excellent tracking ability in soft and high viscosity terrain; coupled with the pontoon's low ground pressure, the amphibious excavators excelled and thrive in this challenging environment.

In the past, the Indonesian government has tried various solutions but none was truly effective. Disappointedly, all effort were fall short in attaining the desire result.

Although an amphibious excavator is very suitable for use in a dredging project, logistics is a major challenge and could hinder in carrying out the work. Jakarta is one of the most densely populated cities in Asia and transporting a machine of this size can be a difficult task. Thanks to the hydraulic extendable pontoon system, the pontoon can be hydraulic retracted to a

minimum footprint during transportation especially in city areas. This feature not only solves the logistic challenge, but also helps the contractor to save a lot of costs and time when it comes to disassembly and reassembly of the machine assuming there is no space constraint in the city areas.

With the overwhelming success of this high profile project, the Indonesian government has recently announced numerous new projects in the country that would require amphibious excavators of various size and models.



Industry Leading Features:

• **Final Drive System:** A break through in final drive design, the patented '**multi-synchronous direct drive**' hydraulic motor on each pontoon. Multiple active motors propelling each pontoon provide superior tracking power, making it virtually undeterred in any terrain. Many users do not realize that swampy areas are not necessary all flat. Mud viscosity varies widely from area to area and country to country. One would fully appreciate the superior design of our multi- synchronous motor powered pontoon system when faced with the most challenging terrains.

Another key advantage is its higher ground speed. We have conducted field tests, and it has been proven that when tracking in high viscosity muddy ground, a higher travelling speed and momentum, when coupled with front and back synchronized motor tracking, can drastically reduce the risk of being stuck and immobilized.

Multi-motors design also offers the advantage of redundancy during unforeseen circumstances.



Patented multi-synchronous direct drive.

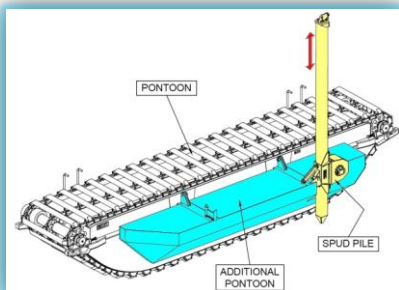
• **Hydraulic Extendable pontoons:** The pontoon undercarriage system is designed to be able to float on water as an added safety feature. It has 3 watertight compartments, hermetically sealed with individual manholes for easy access from the outside for inspection and preventive maintenance.

An innovative design in the undercarriage system allows each pontoon to extend outwardly via hydraulic function, providing the extra stability whenever the situation calls for. This is also an welcoming feature where pontoons can be retracted to its narrow position during land transportation.

Operator would be pleased to know that all these control functions can be executed comfortably with ease from the cabin. Undercarriages designed for 14 ton class and below excavators will have a hydraulic control system for extending and retracting the pontoons as a standard feature.



Pontoons are designed with provision for future addition of supplementary pontoons and spud system if needs arises. A future proof for your investment.



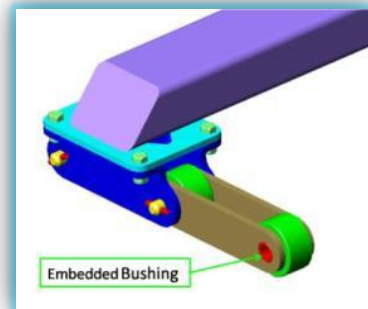
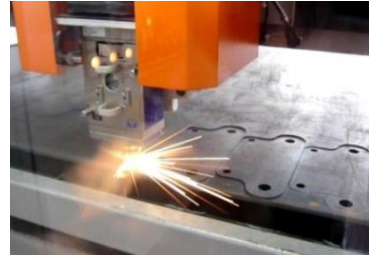
Optional Items:

- Supplementary pontoons can be added on each side to boost stability in deeper water operation.
- Spuds attached to supplementary pontoons help to overcome buoyancy effect, and offers added stability and enhanced operability.

- **Track Chain:** Each pontoon comes with 2 or 3 strands (model dependent) of heavy duty track chains, constructed with high strength steel. Track shoes/cleats supported by multiple strands of track chains provide the advantage of uniform pulling force and superior weight distribution across each track shoe/cleat.

Track chain is one of the most critical components of the undercarriage system, it is entirely in-house design and manufacture, to ensure proper quality control. The criterion of a good design is that it has to perform reliably under various working conditions.

The track chain is laser trimmed to extremely tight tolerance. We insist that this is the only way to maintain the quality consistency we demand, and there should be no compromise under any circumstances.



- **Axle and Sprocket:** We unequivocally favoured a non weld-on sprocket design. Sprockets are precisely machined and bolted onto the axial. This concept ensures a perfect alignment of each sprocket across the axial, a critical criterion for the longevity of the track chain.

The hardworking sprockets, rollers and bushings (embedded within the rollers) are machine finished to high precision and subsequently hardened. This reduces the need for frequent replacement and costly maintenance down time. Rollers are travelling on a strip of wear resistant steel, preventing them from prematurely wearing down to the pontoons.

- **Track Shoe/Cleat:** The track shoes/cleats are steel fabricated and are robotically welded to utmost precision. Steel is favoured over aluminium alloy because of its malleable property. Its malleability makes it less prone to cracking.

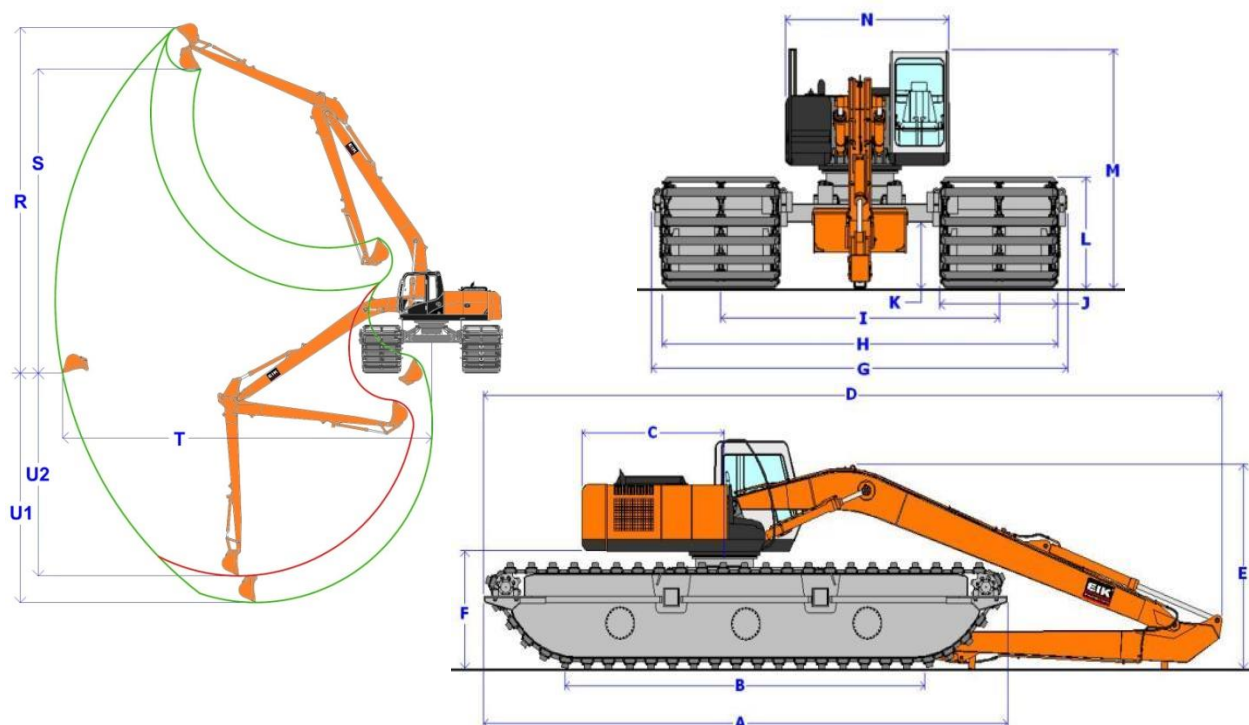
Customer may opt for the polymer track shoes. The grade of polymer we have selected is extremely tough and yet appropriately flexible for its application. It can better retain its shape and is less susceptible to deformation than ferrous based or aluminium alloy. Polymer is also lighter than steel and aluminium.



The polymer track shoe is fully backward compatible, customers who have invested in our pontoon undercarriage can be easily upgraded. Simple and hassle free.

- **Long Reach Boom and Attachments:** One of EIK key strength is front attachment design. We have wide range of attachments to suit various application needs, bucket, clamshell, grapple and etc. The amphibious excavator is most ideal with a long reach boom package. The convenience of an extended reach and greater working range is always a welcomed advantage when carrying out work in marsh land and for dredging related applications.

Amphibious Excavator



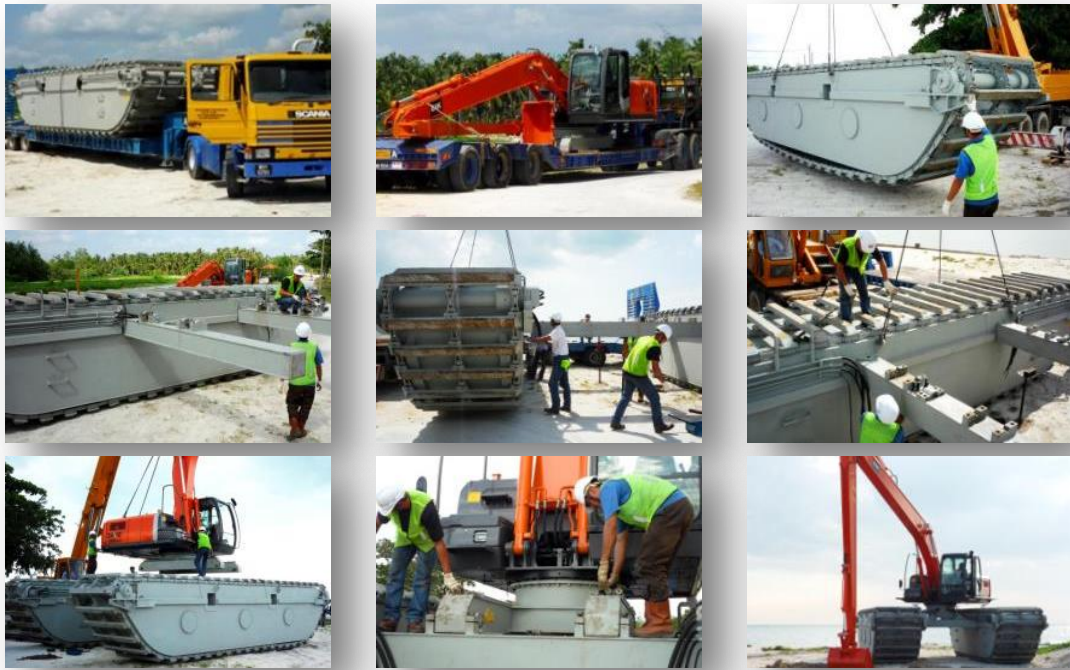
Dim. (m)	Description	Amphibious Undercarriage Models						
		AM80	AM140	AM200	AM250	AM300	AM350	AM400
		For 6 – 8 ton class excavator	For 12 – 14 ton class excavator	For 20 – 22 ton class excavator	For 24 – 27 ton class excavator	For 28 – 30 ton class excavator	For 33 – 36 ton class excavator	For 40 – 45 ton class excavator
A	Max. Track Length	6.28	9.40	9.65	9.65	11.10	11.90	11.77
B	Track Length On Ground	3.17	4.00	4.30	4.30	5.70	6.48	6.50
C	Rear Upper Structure Length	1.50	2.18	2.68	3.00	3.12	3.50	3.65
D	Overall Length	7.10	12.32	13.12	14.40	15.60	16.06	16.50
E	Height of Boom	2.78	2.90	3.23	3.70	4.10	4.00	4.15
F	Counterweight Clearance	1.59	1.75	2.21	2.21	2.35	2.32	2.40
G	Overall Width, min/max (outwardly extendable)	3.51/4.30	4.22/5.32	5.29/ 6.09	5.87/6.67	6.20/7.00	6.27/7.07	6.33/7.33
H	Undercarriage Width, min/max	3.38/4.18	3.95/5.05	5.00 / 5.80	5.58/6.38	5.90/6.70	5.97/6.77	5.97/6.97
I	Track Gauge, min/max	2.06/2.86	2.50/3.60	3.38 / 4.18	3.66/4.46	3.98/4.78	4.02/4.82	4.02/5.02
J	Track Cleat Width	1.30	1.45	1.62	1.92	1.92	1.95	1.95
K	Min. Ground Clearance	1.05	1.07	1.29	1.29	1.15	1.13	1.16
L	Track Height	1.50	1.61	2.05	2.05	2.05	2.05	2.19
M	Overall Cab Height	3.56	3.45	4.14	4.20	4.23	4.25	4.37
N	Upper Structure Overall Width	2.17	2.50	2.71	2.85	2.98	3.00	3.20
R	Max. Cutting Height	9.50	12.50	14.50	16.00	17.10	18.20	19.00
S	Max. Loading Height	8.90	8.50	13.00	14.80	15.80	16.50	17.50
T	Recommended Outreach	9.00	12.00	14.00	15.00	16.00	17.00	18.00
U1	Max. Digging Depth from Front	5.00	7.50	8.50	9.50	10.50	11.50	12.30
U2	Max. Digging Depth from Side	2.95	6.95	7.20	8.00	9.00	10.00	10.80
	Bucket Capacity (m³)	0.25	0.40	0.50	0.70	0.80	0.90	1.10

*Dimensions are for reference only, it may vary from excavator brands and models.

**For the benefit of continuous product improvement, specifications are subject to change without prior notice.

Ease of Transportation and Installation

The modular system was designed with ease of transportation and installation with minimum field equipment and manpower in mind, yet without compromising speed and safety. A trained 4-man team can fully assembled a complete 20 ton class machine in under 3 hours, only assisted by a crane.



Post Sales Service and Support

We are a vertically integrated organization and take pride in our fully in-house design and manufacturing capability. Most parts and components are manufactured in-house, thus considerably reducing the risk of components becoming unavailable in years to come. Spare parts are well-stocked and can be delivered at a short notice. The availability of spare parts is guaranteed for at least 10 years.





Our headquarter is located in the city of Johor Bahru within the state of Johor, a metropolitan city at the southernmost tip of Peninsular Malaysia with a population of over two million. It is a mere 10 minute journey from Singapore across the Straits of Johor.

EIK Engineering Sdn. Bhd.

No. 10 (PTD 5749), Jalan SiLC ¼, Kawasan Perindustrian SiLC,
79200 Nusajaya, Johor, Malaysia.

Tel: +607-531 9922, Fax: +607-531 9919

E-mail: sales@eikengineering.com.my / info@eikengineering.com

Eik Lam Engineering Sdn. Bhd.

24, Jalan Mega 1/4, Taman Perindustrian Nusa cemerlang,
79200, Nusajaya, Johor Darul Takzim, Malaysia

Tel: +607-554 2700

E-mail: eiklamsb@streamyx.com

Regional Sales Offices:**Singapore****EIK Singapore**

59 Mohamed Sultan Road, #01-08, Singapore 238999

Tel: +65-6933 5376, Fax: +65-6877 0013

E-mail: sales@eikengineering.com / info@eikengineering.com

Japan**EIK Japan**

No. 7-10, Kotobashi 2-Chome, Sumida-Ku, Tokyo 130-0022,
Japan

Tel: +81-3-6905-8885, Fax: +81-3-6905-8883

E-mail: japan_sales@eikengineering.com

Vietnam**EIK Vietnam**

Room 2104, 25T1 Office Building,
Lot N05, Hoang Dao Thuy Street, Trung Hoa Ward,
Cau Giay District, Hanoi, Vietnam

Tel: +84-4-35190374, Fax: +84-4-35190390

E-mail: vietnam_sales@eikengineering.com

Malaysia**Kuala Lumpur**

No. 28, Jalan Astaka U8/84A,
Bukit Jelutong, 40150, Shah Alam, Selangor.

Tel: +603-7859 9221, Fax: +603-7859 9231

E-mail: sales_kl@eikengineering.com.my

Sabah

Jalan Sulaman, Kg. Bendulan,
88450 Kota Kinabalu, Sabah.

Tel: Tel: +60 88-489 662, Fax : +60 88 489 663

E-mail: sales_sabah@eikengineering.com.my

Sarawak

Lot 1176 , Section 66 , Kuching Town Land District ,
Jalan Utama , Pending Industrial Estate,
93450 Kuching , Sarawak.

Tel: +60 82-335 922, Fax : +6082-345 922

E-mail: sales_sarawak@eikengineering.com.my

