

CLEAN, GREEN MOTIVE POWER COMES TO SAN FRANCISCO



SFBR and the Port of SF Welcome Their New Tier 4 Switcher Locomotive



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specified, designed, funded and fabricated by:



A quick trip down memory lane on “The Belt” Railroad of SF...



Between 1943 and 1945, the State Belt RR of California acquired six (6) Alco S-2 diesel locomotives built in Schenectady, NY



To supplement the half dozen State Belt steam locomotives still working hard to support the heavy wartime traffic along the SF Embarcadero



After 1969, the San Francisco Belt RR inherited three of the six Alco S-2 locomotives #23, #24 and #25 (out of service #24 kept as a parts donor)



The 80's to 90's = #23 to #49?

**Both surviving Alcos called Golden Gate Railroad Museum home
at the former naval shipyard at Hunters Point**



The 2000's: fresh paint and some mechanical TLC



Return to revenue freight service at SFBF's Pier 96 railyard



75 Years of San Francisco Waterfront Rail Service



Waste Solutions Group truck-to-railcar loading operations at Pier 96



Union Pacific's "South City Switcher" through urban San Francisco



Union Pacific RR's Port of SF originating train to East Carbon, UT



Back at The Belt: Time to Tier 4-ward into the 21st century



A New Approach to Green Locomotive Repowers



- Unlike many other green locomotives, KLW uses a single diesel engine to generate the electrical power needed to move the unit.
- KLW is the only company using a high-speed engine (up to 1,800 RPM) and 2:1 reduction gearbox with the common AR10 alternator.

THE SINGLE-ENGINE SOLUTION

KLW SE10B: SINGLE-ENGINE 1050HP SWITCHING



The KLW SE10B is the lowest emitting and lowest consuming locomotive offered by KLW.



The Series 2000 12V C66R is 1,050 bhp.

The KLW SE10B is specifically designed for smaller operations with low speed limits of 10 mph or less. Similar to the KLW SE15B, KLW understood the need for a low horsepower switcher locomotive because of its background in the short line railroad industry. Because of the smaller engine and radiator size, the SE10B repower package fits on almost any 4-axle locomotive frame, including those of MP and larger SW locomotives. The SE10B's small size allows it to take the tighter curves while offering the lowest fuel consumption and emissions compared to the other KLW models.

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(IT'S NOT A GENSET!)

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MARINE PROVEN, RAILROAD READY.



ZF gearboxes are designed to handle shock load forces of up to 10 G's.

KLW's high-speed engine with low-speed AR10 design is only possible with the use of ZF gearboxes. The gearboxes are derived from marine commercial vessel transmissions and are common in the marine industry. Each gearbox features a single, multiple-plate, clutch that is controlled electronically and is integrated with the MTU engine's control and monitoring system. After approximately six seconds from engine startup the clutch automatically engages and turns the AR10 alternator. This approach provides smooth operation, protects the engine and gearbox on startup, and allows the engine to startup with virtually no load which increases starter life and makes dead batteries a thing of the past. Best of all, operation is seamless to the crew, which will need almost no training to operate the locomotive.



The MTU engine used in the SE10B is approximately half the size of the engine it typically replaces.

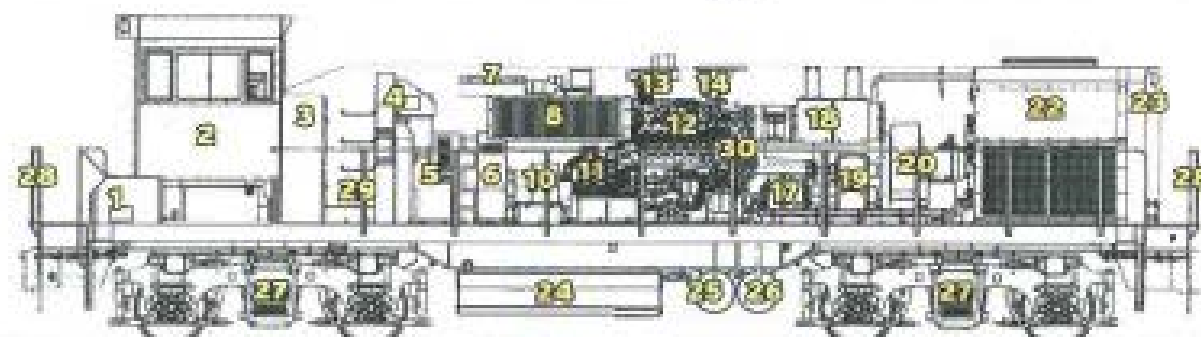
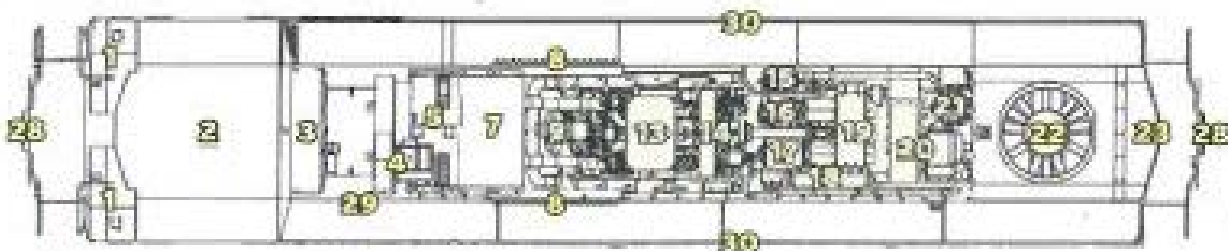


The SE10B is equipped with the AR10 alternator and industry-standard OEM switch gear.

Low Horsepower = Low Fuel Cost

The KLV SE10B is the lowest fuel-consuming locomotive offered by KLV. Thanks to the fuel efficient MTU engine, the SE10B is capable of consuming up to 65% less fuel when compared to a traditional locomotive. In the EPA's switch duty cycle, the KLV SE10B is estimated to save 58% on fuel consumption compared to the MP15 and 61.5% compared to the GP10, resulting in a savings of \$88,000 to \$102,000 at the 4,000 hour mark with fuel at \$3.50 per gallon. If replacing higher horsepower locomotives, such as a GP38-2, the fuel savings can reach 65% or more in certain situations depending on the duty cycle.

Learn more about our models at:
www.goklv.com



KLW SE10B General Arrangement

1	64V Battery Boxes and Sand Boxes	15	Air Compressor
2	Locomotive Cab	17	Auxiliary Generator
3	TMV Electrical Cabinet	18	AC Cabinet and 80 Panel
4	ARIO Blower	19	Accessory Drive Assembly
5	ARIO Traction Alternator	20	Traction Motor Blower Assembly
6	KLW ARIO Bearing Adapter	21	Air Compressor Oil Sump Tank
7	Baggie Filter Housing	22	Radiator System
8	Inertial Filter System	23	Front Sand Box
9	Inertial Bleed Motor	24	Fuel Tank
10	Centa Coupling	25	Main Reservoir 2
11	ZF Gearbox	26	Main Reservoir 1
12	MTU Engine	27	Truck Assembly
13	Exhaust	28	End Handrail
14	Coolant Expansion Tank	29	Roof Ladder
15	Racor Fuel Filters	30	Long Hood Handrail

WHEEL SLIP AND ENGINE CONTROL



The TMV TECU system can improve tractive effort by up to 40% depending on the operation.

The TMV Traction and Engine Control Unit (TECU) is a next generation locomotive control system that is primarily known for its superb wheel slip detection and control. The traction control abilities of the TECU system can increase tractive effort for locomotives by up to 40%. Proof of this increase was validated by a Class I test that resulted in KLR's demonstrator locomotive accelerating approximately 30% faster than a similar horsepower GP39-2. Not only does the increase in tractive effort increase productivity, it may also allow for fewer locomotives to be used for larger trains, which results in tremendous savings for emissions and fuel/maintenance costs.

SFBR visits Knoxville Locomotive Works (KLV), Tennessee – 09.2017









Chesapeake & Ohio 6163 – KLR's selected GP9 frame donor





Final paint diagram of SFBR's Tier 4 clean emissions SE10B switcher



KLW shops begins SFB 30 build

SFBR 30 – Project 1031 – KLW SE10B T4L – Frame # 5496-5

KLW



Car body work has begun.

SFBR 30 – Project 1031 – KLW SE10B T4L – Frame # 5496-5

KLW



Carbody slope is attached and additional work is being done on the low-volt wiring system.

SFBR 30 – Project 1031 – KLW SE10B T4L – Frame # 5496-5

KLW



Additional work is being done on the low-volt wiring system, connecting components to the electrical cabinet.



SFBR 30 – Project 1031 – KLW SE10B T4L – Frame # 5496-5

KLW



Carbody and panels are installed and radiator is welded in place.



SFB 30 construction progress visit at KLR shops – 04.2018





Fresh out of the KLR paintbooth, drying in the summer sun



SFB 30 Westward bound – the 2700 mile journey to California



Held captive in East Los Angeles for a week!



Roseville bound - cruising up the Central Valley





UNION PACIFIC

SAN FRANCISCO BAY RAILROAD

30

FPAX
5830



Bay Area bound - our new engine meets the SF Bay









UP delivers SFB 30 to her new home at the Port of San Francisco







Set up, operations training, load + brake testing



Shakedown runs + first (wet) week of early AM revenue switch duty













In with the new, out with the old











SF Belt #25 moved to it's new display track recognizing 75 years of diesel-electric freight locomotives working on San Francisco's waterfront





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